C50/C50D

Thank you for purchasing the C50/C50D FM Triple Bander.

This unit is produced through our strict quality assurance and inspection and thereupon released to the market. If you have suspicion or suggestion, contact with that dealer from which you have purchased, or our authorized representative or service office as early as possible.

To make the best and long-time use of this product, carefully read this instruction manual well up to the end. Further, keep the instruction manual with care.

This instruction manual makes a description common to C50 and C50D. However, where difference in contents exists between them, note that description is doubly made differently from each other.

In addition, the transmission output of the C50D is 50 watts for VHF and 40 watts for UHF. For use of the C50D, you should be qualified as an amateur radio operator of the second class or higher as well as licensed for a station operating on over 10 watts.

Contents:

Note: An article with a page number in [] is a description when an option has been connected.

Packing Diagram

After packing, confirm the accessories.

Accessories

Instruction manual

Circuit diagram

List of our authorized dealers

User's card カード

Warranty card

3.5-mm plug ジ
(for external speaker)

DIN plug・グ
(for ACC1 packet terminal)ル)

AC fuse ―ズ
(250 V/4 A))

Remote control microphone
(battery excluded)

Feeder antenna ンテナ
(for remote control)

AC power cord ド

Band addition kit・ト
(VOL/SQL knobs and panel)ドパネル)

Earphone
(for remote control)
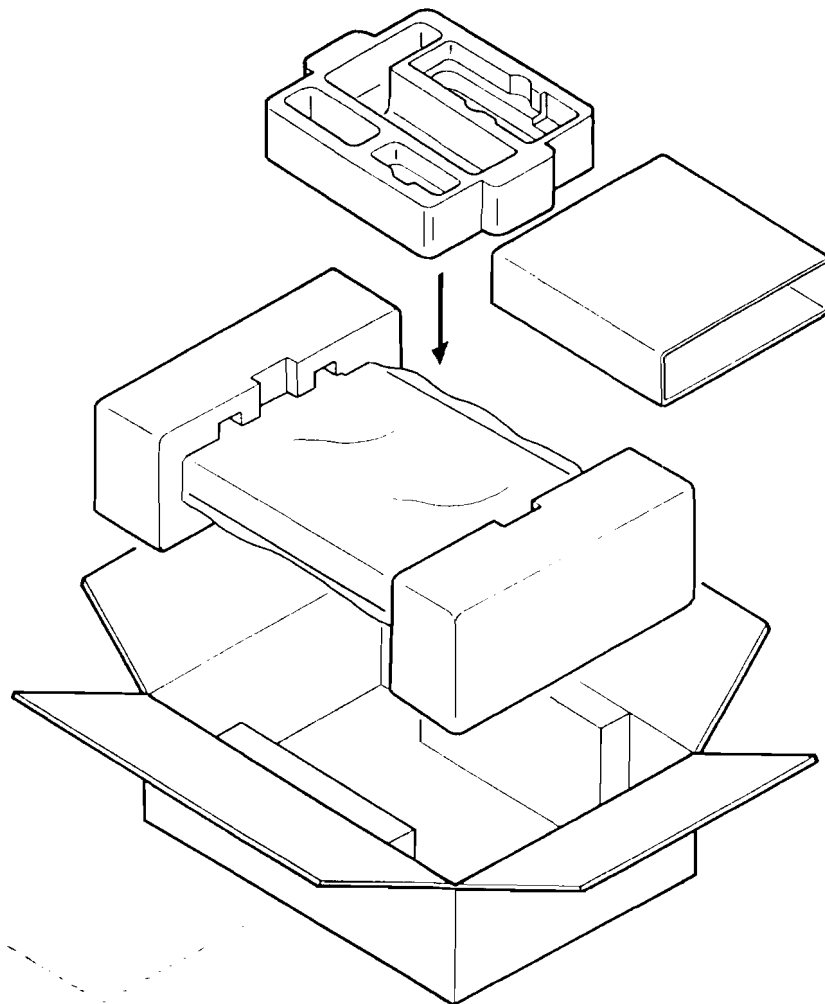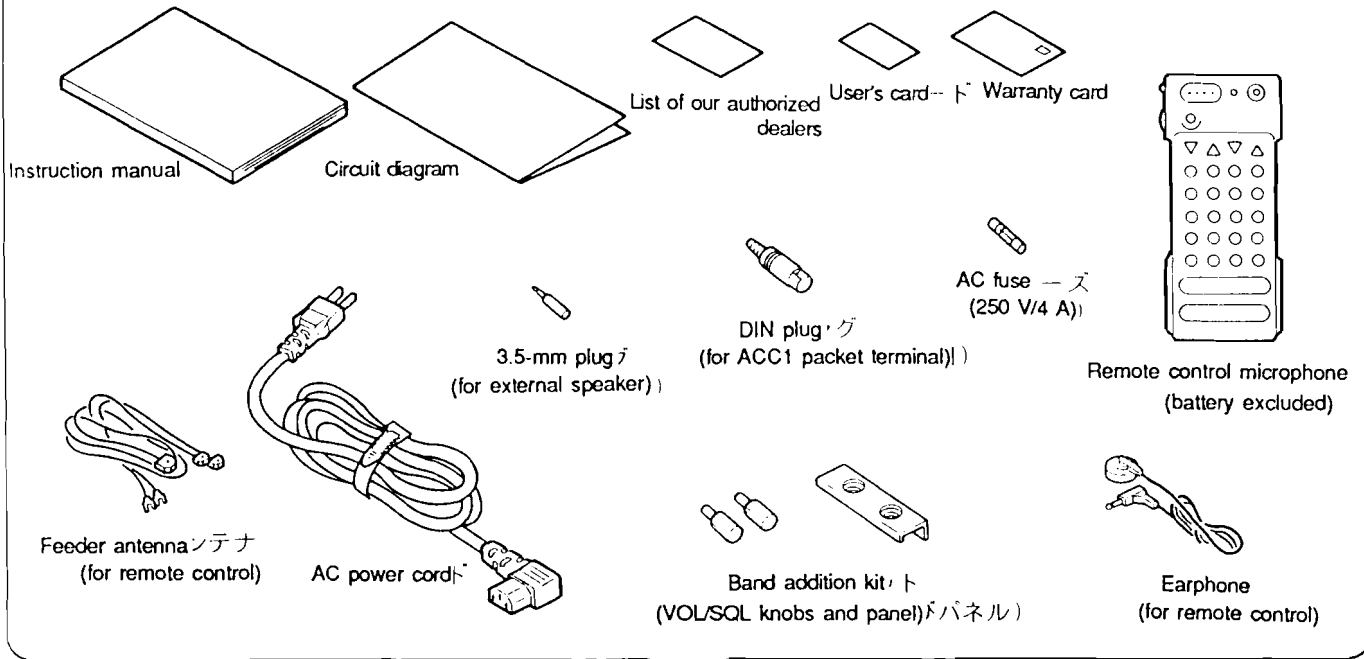
[Precautions for correct use]

Avoid use in excessively humid or dusty locations or in high temperature locations, as this may cause failure.

High temperature — Dusts — Humidity
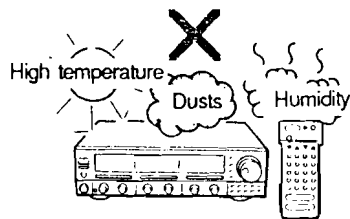
Be careful not to let water or foreign matter enter into the unit, as this may cause failure or danger of electrical shock.

Water   Metallic piece or foreign matter
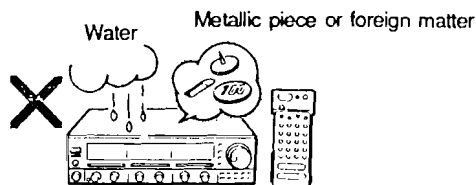
Avoid use in locations subject to severe vibrations or shocks or in locations where ventilation is poor.

Poor ventilated location

Vibrations or shocks
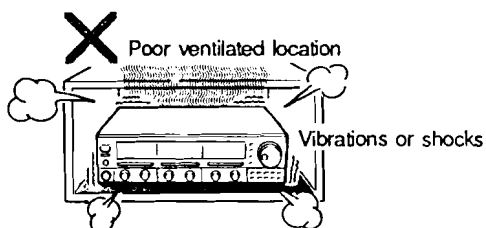
Do not put a heavy load on the unit.

Heavy matters
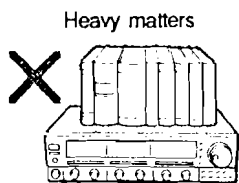
Do not disassembly the unit. For the remodeled unit or when failure occurs due to remodeling, repair is onerous even within the warranty term.

Hazardous
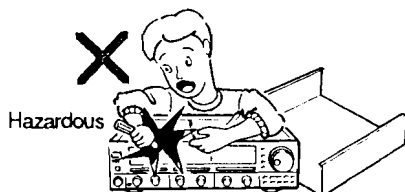
Be careful not to damage the power cord. Do not put a heavy load on the power cord. When unplugging the power cord, hold the plug section, not the cord.

Bent

Heavy load

Hold the plug to disconnect
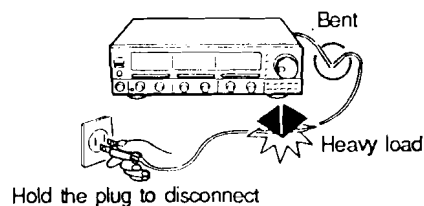
When the unit is not used for an extended period of time, unplug the power cord. More, disconnect the battery of the remote control.

Against approaching lightening, it is recommendable to unplug the power cord and disconnect the antenna connector to ensure safety.

Unplug the power cord and disconnect the antenna connector.
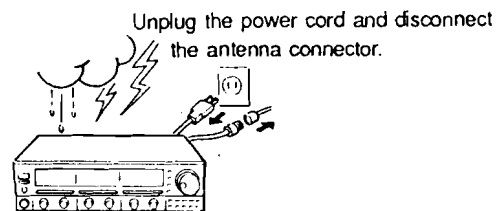
When abnormality or defect occurs in the unit, unplug the power cord.

Unplug the power cord.
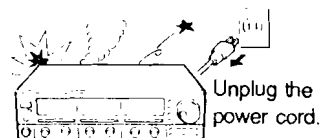
This product operates on power supply of AC 100 V or DC 13.8 V. Application of a voltage other than specified causes failure.

AC 100 V or DC 13.8 V

3
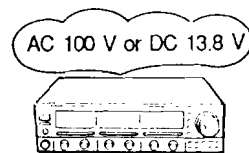
When the product is soiled, wipe the cabinet with a soft cloth. Unless cleaned, soak a cloth in neutral detergent water, and wring it dry thoroughly, with which then wipe the cabinet. Avoid use of an organic solvent such as thinner, benzine, spray, etc.

Cloth soaked in neutral detergent water and then squeezed well dry
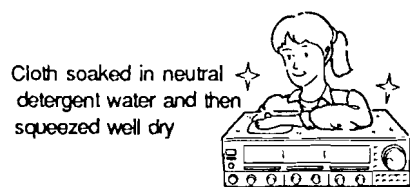
With the old battery of the remote control, the operating range is reduced so that sufficient operation is not made. Early replacement is recommended.
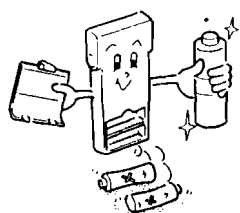
Avoid mixed use of old and fresh battery cells.
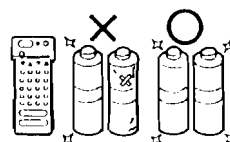
Do not throw any battery cell to fire.
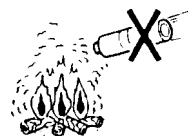
Connect a battery cell with its polarities (positive and negative) set correctly.

Positive

Negative
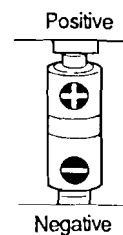
Prearrangements

1. Antenna connection

Different antennas are available according to applications. Select an antenna suited to the purpose of use.

1) When connecting antennas for each band

430 MHz band antenna

144 MHz band antenna

430MHz ANT

144MHz ANT
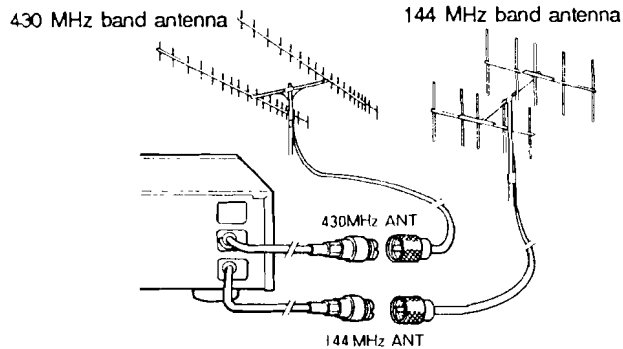
2) When using a band common antenna

430MHz

144MHz

Duplexer
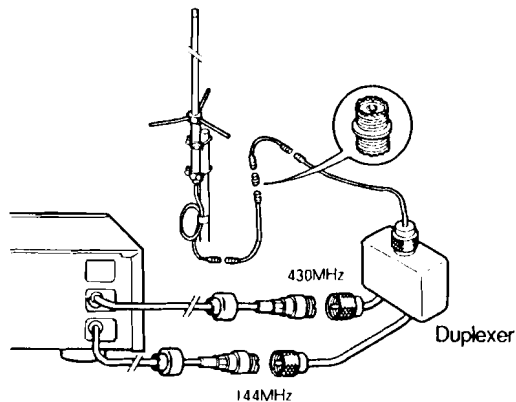
2. Grounding

To prevent electric shock hazard and interference from another device, be sure to ground the unit. Concretely, put a ground rod sold on market or a copper plate into the ground, to which in turn connect the GND terminal on the rear of the unit by as thick a wire as possible at the shortest possible distance.

[Caution]
To ground, never use such a means as a gas tubing, a power distribution piping, etc., as this is very dangerous.

3. Power connection

3-1 For operation on AC power

[1] Connect the accessory AC power cord to the AC 100 V 50/ 60 Hz terminal.
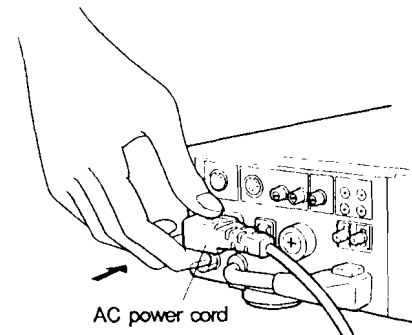
AC power cord

[2] Plug in the AC power cord to the AC 100 V wall outlet.
. This unit is to operate on AC 100 V. Never use of any other than AC 100 V.

AC 100 V wall outlet
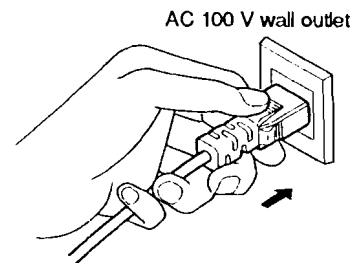
[3] Set the MAIN SW (main power switch) on the rear of the unit to ON. A clock display appears on the display section. The MAIN SW is the power switch of the power supply circuit.
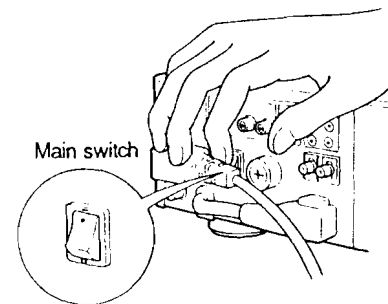
Main switch

[Note]
The clock display time is not adjusted. For time adjustment, refer to "19. Clock function".
The unit is provided with the MAIN SW (main power switch) on its rear. For operation on AC 100 V, be sure to set this switch to ON.

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3-2 For operation on external DC power

The unit is also operable on an external DC power.

[1] Set the MAIN SW (main power switch) on the rear to OFF.

MAIN SW

[2] Unplug the AC power cord.

AC power cord

AC 100 V wall outlet
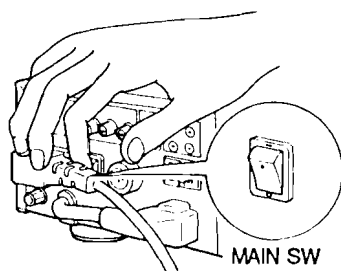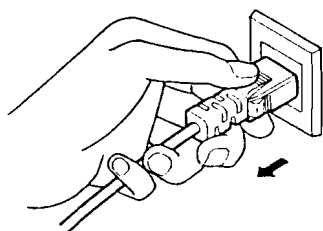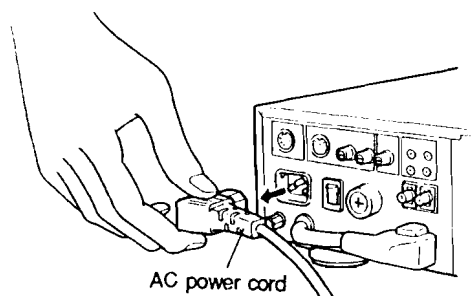
[3] Unplug the DC power cord from the DC OUT terminal.

DC power cord
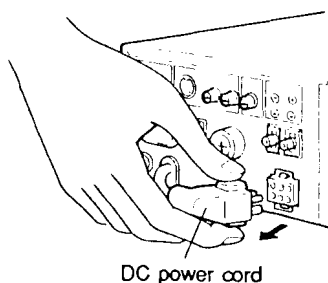
[4] Connect an optional cable (CAW05) to the DC IN terminal.

Connect the optional DC cable to a DC regulated power supply or a battery. (A red line: positive polarity,   black line: negative polarity)

A clock display appears on the display section.

DC regulated power supply
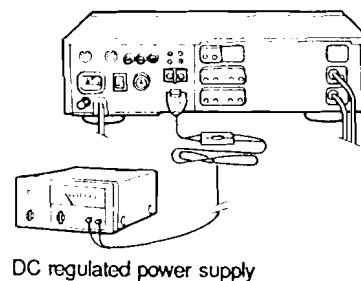
[Notes]

1. For operation on an external DC power, be sure to unplug the AC power cord from the wall outlet and set the MAIN SW (main power switch) to OFF.

Be sure to unplug.

AC 100 V wall outlet

MAIN SW
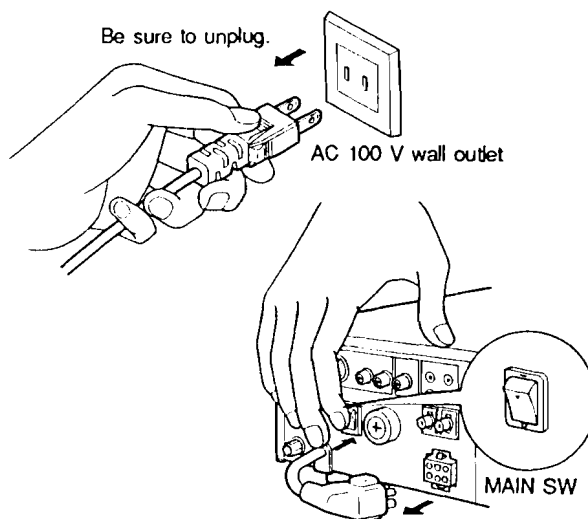
2. The rated DC supply voltage is 13.8 V. Never apply other than the rated DC supply voltage, as this may cause failure.

3. For 24 V type vehicles, use of a DC-DC converter is needed.

DC-DC converter
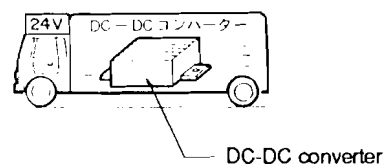
Prearrangements are completed therewith.

6

4. Loading battery to remote control

[1] Loading two SUM-3 cells to the remote control.

Open the cover.

Load in two SUM-3 cells with polarities set correctly.
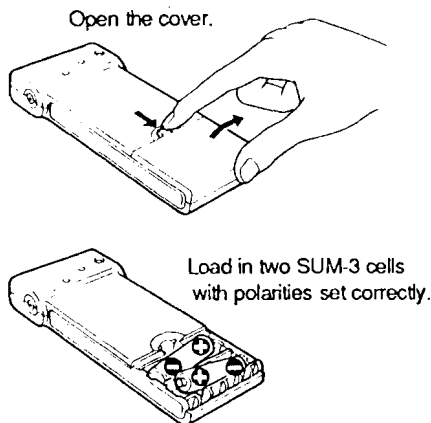
[Note] A nickel-cadmium battery cannot be used.

Close the cover.
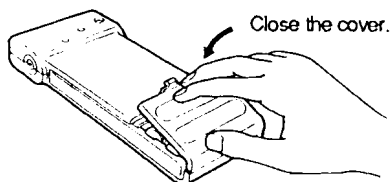
[Advice]
Most of various functions of the radio unit can be operated by this remote control. It is also possible to monitor or transmit the audio signal of the radio unit by this remote control. Belong only to the remote control such functions as packet function setting, code setting in paging mode or code squelch mode, squelch OFF, DTMF code setting, voice memory, and program scan. These functions cannot be operated from the radio unit.
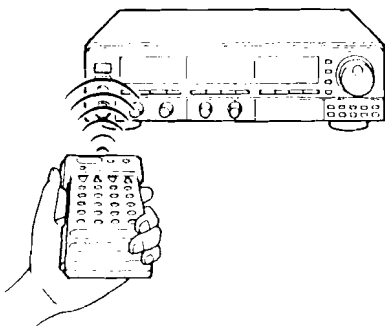
[Notes]
1. Operate the remote control within 5 m and 30 away from and to the receiver section.

2. Operate the remote control directly to the receiver section, as any function other than the PTT functio (transmission) and monitor function is controlled by an infrared light.

3. When the battery power is low, weak electromagnetic waves is insufficient in output level.

5. Connecting the remote control antenna

[1] Connect the accessory remote control antenna to the RE-MOTE ANT terminal of the radio unit. Therewith, it is feasible to monitor the receive sound in the remote control side and make transmission from the remote control.
Install the remote control antenna vertical.

REMOTE ANT terminal
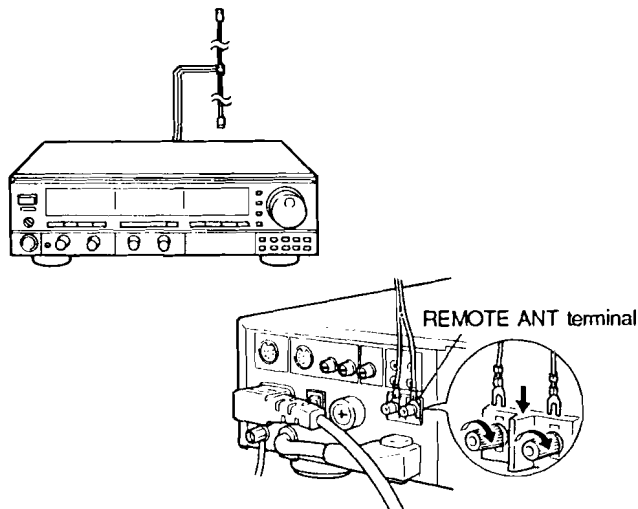
[Notes]
1. Without the remote control antenna connected to the radio unit, the PTT function (transmission) and the monitor function are not feasible.

2. Remote control monitor function or remote control transmission is performed upon weak electromagnetic waves. Therefore, operating distance differs according to the positional relationship between the remote control antenna and the remote control itself.
Install the remote control antenna in such a manner that the distance between the remote control antenna and remote control itself is minimized.
In addition, it is recommended that the remote control be used within an range (approx. 3 m) at which the displayed data on the display of the radio unit can be easily seen.
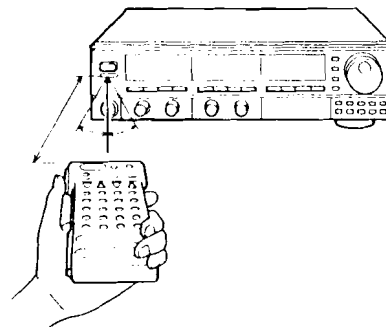
6. Power ON

[1] Set the POWER switch on the front to ON.
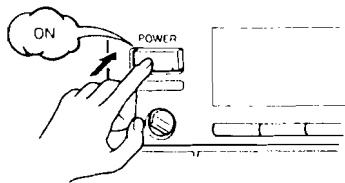
[2] "145.00" appears on the left side of the display section, "433.00" on the central side of the display section, and a clock on the right side of the display section. If nothing is displayed, immediately set the POWER switch to OFF to check the following points:

Left side for 144 MHz band

Frequency display with band unit connected

Center for 430 MHz band
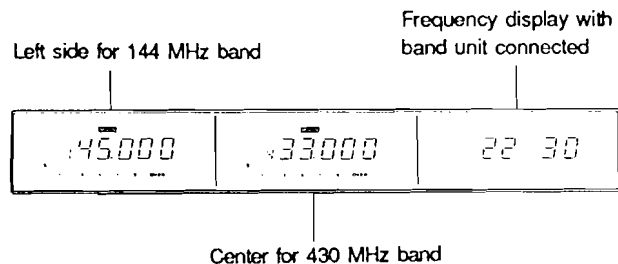
(1) Check whether or not the fuse blows off.

(2) Check whether or not the AC power cord is correctly connected to the AC 100 V 50/60 Hz terminal. (Connect it in to the depth fully.)

(3) Check whether or not the DC power cable running from DC OUT is connected to DC IN 13.8 V. (Connect it in to the depth fully.)

(4) Check whether or not the AC power cord is correctly connected to the AC wall outlet.

(5) Check whether or not the MAIN SW (main power switch) on the rear is set to ON.
From checking, unless any abnormality is discovered, contact with our authorized dealer or service station.

7. About beep sounds

Single short high-pitched sound (A):
Emitted to indicate a valid button operation by which its corresponding mode is set.
Single soft high-pitched sound (B):
Emitted to indicate a valid button operation by which its corresponding mode is canceled.
Single long high-pitched sound (C):
Emitted to indicate that CALL, PMR, direct input (remote control), code input or MR has been written.
Triple short high-pitched sound (D):
Emitted to indicate that power has been turned ON by ON timer operation.
Single short high-pitched and double short low-pitched sound (E):
Emitted to indicate the signal incoming in paging mode.
Single long heavy sound (F):
Emitted to indicate an invalid operation.
Double short high-pitched sound (G):
Emitted to indicate that the display erase function is canceled.
Single long soft sound (H):
Emitted to indicate that the write or read time for the voice memory has been terminated.
Triple differing sound (I):
DTMF monitor sound

[Note]
Any beep sounds other than the DTMF monitor sound are separate from the volume control.

8. Memory backup

, The C50/C50D is memory backed up by means of an EEPROM and a rechargeable lithium battery.
, The memory contents are all written in an EEPROM to ensure the memory backup for approximately 10 years without additional power supply.
, The VFO contents are backed up for approximately one month owing to a rechargeable lithium battery.

[Note]
After purchase, charge the lithium battery.

, This rechargeable lithium battery is always charged when the radio unit is powered (also when the clock display only is made).
, This rechargeable lithium battery needs approximately 20 hours until it is fully charged. For this, keep the power of the radio unit ON (charging is also possible when the clock display only is made).

9. Nomenclature and handling

[] The main body of the C50/C50D is referred to as the radio unit.
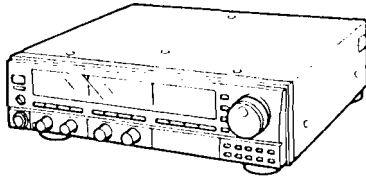
[] The remote control section is referred to as the remote control.
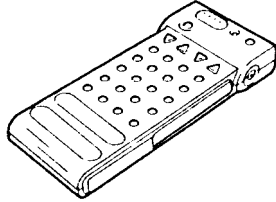
[] The state that two bands are connected is referred to as the standard equipment.

[] The state that the 28 MHz or 1,200 MHz band unit is connected is referred to as with band unit connected.

[] As regards the display of the C50/C50D, the left side is for 144 MHz band, the center is for 430 MHz and the right side is for clock display or band unit connection.

Left side for 144 MHz band

Frequency display with band unit connected

Center for 430 MHz band
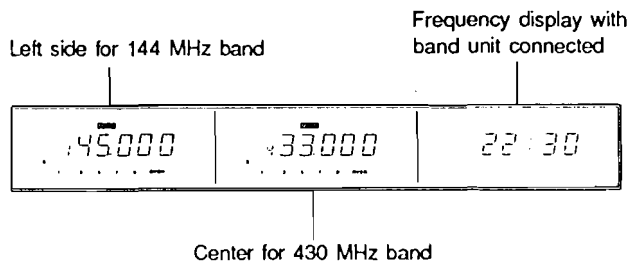
[] The operation of the C50/C50D is as follows:

1) Direct button pressure to operate

2) Button pressure in function mode (During the function mode, "F" appears on the display section.)

3) Another button pressure while pressing the FUNC button (Mainly by the remote control)
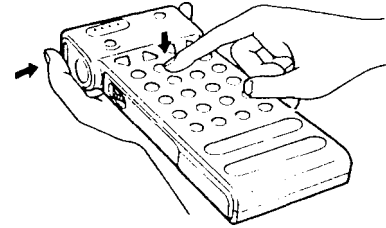
For easier reading of this book

*In this product, three operations are performed of the radio unit, the remote control and the microphone (option).

This manual is prepared basing upon the following rules:

▽ Mark ⼒	Meaning of mark
	Operation only on radio unit
	Operation only on remote control
	Operation only on microphone
	Operation on radio unit and remote control
	Operation on radio unit and microphone

On button operation

◇ The C50/C50D is operated as follows:

1. Direct button pressure to operate

$$\left(\underset{\square}{\text{RPT/SIFT}} \right) \quad \underset{1}{\overset{\text{PAG}}{\bigcirc}} \qquad (\ ): \text{Operation on radio unit}$$

2. Button operation in function mode
   (Mainly on radio unit. When the FUNC button on the radio unit is pressed, "F" lights for 3 seconds on the display section.)

$$\left(\underset{\square}{\text{FUNC}} \rightarrow \underset{\square}{\text{SUB/K.L}} \right) \qquad (\ ): \text{Operation on radio unit}$$

3. Another button operation while pressing the FUNC button
   (Mainly on remote control. "F" is not displayed on the display section.)

$$\boxed{\text{FUNC}} + \underset{\text{D}}{\overset{\text{MW K.L}}{\bigcirc}}$$

[Names of Parts and Their Functions]

Remote Control Section

⑤ TX (transmission indicator)

④ MIC (built-in microphone)

⑦ SQL OFF (squelch OFF)

⑧ VOL (volume controls)
⑩ SUB (sub)
⑪ 144 (main band selection)
⑭ 1 PAG (paging)
⑮ 2 CODE (code)
⑱ 4 PACKET
⑲ 5 VOICE
㉒ 7 RPT
㉓ 8 REV
㉖ * PMR MUTE
㉗ 0 TIME

㉜ CH MHz

⑥ POWER (power switch)

⑨ CH MHz
⑬ 28/1.2G (main band selection)
⑫ 430 (main band selection)
⑰ A CLR PWR
⑯ 3 T.SQL (tone squelch)
㉑ B MR ATT
⑳ 6 VU
㉕ C MS PS
㉔ 9 +
㉙ D MW K.L
㉘ # CALL DIMM

① FUNC (function button)

② PTT (transmission button)

③ VOL (volume control)

㉚ Earphone jack

㉛ BATT

11

Remote Control Section

(1) FUNC (function button)

Press to engage the function mode. While pressing the FUNC button, when a button on the remote control is pressed, operation is made in white letter display.

(2) PTT (transmission button)

Press to enter the main band to the transmission mode independent of the position of the MIC SELECTOR switch on the radio unit. (This function is not subject to infrared ray control.)
In the transmission mode, "TX" is displayed on the display section and the RF meter works.
More, a single short high-pitched beep sound (A) is heard from the radio unit itself, indicating that operation is controlled by the remote control.
Communications are possible using the built-in microphone of the remote control.

(3) VOL (volume control)

Handle to control the volume of the earphone of the remote control unit. With the earphone connected in to the remote control unit, the receiver of the remote control is powered.
When not monitoring or when not using for an extended period of time, be sure to unplug the earphone from the remote control unit.
Even when the VOL knob on the radio unit is set to MIN, the monitor sound can be heard in the remote control unit side.

(4) MIC (built-in microphone)

Capable of communications through the main band irrespective of the position of the MIC SELECTOR switch on the radio unit. (This function is not subject to infrared ray control.)

(5) TX (transmission indicator)

When the PTT button is pressed, this lights in red to indicate the transmission mode.

(6) POWER (power switch)

Press to turn ON/OFF the power. This switch is independent from the MAIN switch.

(7) SQL OFF (Squelch OFF)

Press to select between squelch OFF and beep sound ON/OFF. Only while the button is pressed, sound is heard from speaker. This feature is convenient in receiving weak signals. While pressing the FUNC button, when this button is pressed, the beep sound ON/OFF operation is made.

(8) VOL (volume control buttons)

Handle to drive the electronic volume control to adjust the speaker volume. Pressing " " continuously causes decrease in volume of main band, while pressing " " continuously causes increase.

(9) CH MHz

Press to vary the frequency of the main band.
While pressing the FUNC button, when either button is pressed, the frequency varies at steps of 1 MHz.
Pressing " " continuously causes decrease in frequency, while pressing " " continuously causes increase.
When "F" is displayed on the display section, when a button is pressed, the frequency changes at steps of 100 kHz.

(10) SUB

Press to designate a sub band. With a band unit connected, this button serves to set the sub band mode.
After pressing the SUB button, when the main band select button corresponding to the band to be taken as a sub band is pressed, a sub band is set.

(11) 114 (main band selection)

Press to select the 144 MHz band as the main band. With a band unit connected, this is also used in setting the sub band.

(12) 430 (main band selection)

Press to select the 430 MHz band as the main band. With a band unit connected, this is also used in setting the sub band.

(13) 28/1.2G (main band selection)

Press to select the 28 MHz band or 1,200 MHz band as the main band. This button is disabled with no band unit connected. More, it is also used in time setting. With a band unit connected, it is also used in setting the sub band.

(14) 1 PAG (paging)

Press to enter numeral 1 or set the paging mode or the code squelch mode. While pressing the FUNC button, when this button is pressed once, the paging mode is engaged. In this way, when it is pressed once more, the code squelch mode is engaged.

(15) 2 CODE

Press to enter numeral 2 or call the code. While pressing the FUNC button, when this is pressed, the code call mode is engaged. It is disabled without CTD50 connected.

(16) 3 T.SQL (tone squelch)

Press to enter numeral 3 or set the tone squelch mode.
While pressing the FUNC button, when this button is pressed, the tone squelch mode is engaged, at which time "T.SQL" is displayed on the display section.
It is disabled with CTN50 connected.

(17) A CLR PWR

Press to send DTMF signal A or set the VFO mode or select the transmission output level.
While pressing the PTT button, when this button is pressed, DTMF signal A is sent (when optional DTMF unit CTD50 is connected).
While pressing the FUNC button, when this button is pressed, the transmission output level can be selected in three steps. Initially, the transmission output level is set to the high power.
When this button is directly pressed, the VFO mode is engaged.
*In the VFO mode, the LED of the VFO/STEP button on the radio unit will light.

(18) 4 PACKET

Press to enter numeral 4 or set the packet mode.
While pressing the FUNC button, when this button is pressed, the packet mode is engaged, at which time "PAC" is displayed on the display section.
*The radio unit itself is not provided with a function to set the packet mode. This operation should be made from the remote control side.

(19) 5 VOICE

Press to enter numeral 5 or call the voice memory.
While pressing the FUNC button, when this button is pressed, the voice memory call mode is engaged.
For operation with the voice memory, voice memory unit (CVM50) option is necessary.
*The radio unit itself is not provided with a function to call the voice memory. This operation should be made from the remote control side.
This operation is disabled without CVM50 connected.

(20) 6 VU

Press to enter numeral 6 or set the VU meter.
While pressing the FUNC button, when this button is pressed, the
VU meter runs, at which time "VU" is displayed on the display
section.
The VU meter reads as follows:
1) At reception: The meter reads according to the receive
sound.
2) At transmission: The meter reads according to the
strength of the voice (mod.) from the microphone.

(21) B MR ATT

Press to send DTMF signal B or call the memory or attenuate the
receive sensitivity.
While pressing the PTT button, when this button is pressed,
DTMF signal B is sent.
While pressing the FUNC button, when this button is pressed. the
receive sensitivity is attenuated about 10 dB, at which time "ATT"
is displayed on the display section.
When this button is pressed directly, the memory is called.

(22) 7 RPT

Press to enter numeral 7 or set the repeater mode.
While pressing the FUNC button, when this button is pressed, the
repeater mode is engaged, at which time "RPT" is displayed on
the display section.

(23) 8 REV

Press to enter numeral 8 or set the reverse operation in the
repeater mode.
While pressing the FUNC button, when this button is pressed, the
reverse operation is performed, at which time "REV" is displayed
on the display section. This is enabled only when the repeater
mode is set. In this case, however, when the frequency goes off
the band, the reverse operation is not performed.

(24) 9 +

Press to enter numeral 9 or set to "+" the shift direction of the shift
frequency in the repeater mode.
While pressing the FUNC button, when this button is pressed, the
shift direction of the shift frequency is set to "+", at which time "+"
is displayed on the display section. Initially, the shift direction is "-
", (in which case any directional sign does not appear on the
display section). However, this is disabled other than the repeater
mode.

(25) C MS PS

Press to send DTMF signal C, scan the memory or program, or
select the 1 MHz width scan operation.
While pressing the PTT button, when this button is pressed,
DTMF signal C is sent.
In the VFO mode, while pressing the FUNC button, when this
button is pressed, the 1 MHz scan operation is entered.
In the memory call mode, while pressing the FUNC button, when
this button is pressed, the program scan operation is entered.
When it is pressed directly, the memory scan operation is entered

[Advice]

[] When the memory is all blank, a single beep sound is
heard. Thus, no scan operation is performed even when the
button is pressed.

(26) * PMR MUTE

Press to send DTMF signal * or call the priority memory or select
the audio signal mute.
While pressing the PTT button, when this button is pressed,
DTMF signal * is sent.
While pressing the FUNC button, when this button is pressed, the
audio signal is muted. Muting is made in both the radio unit and
the remote control monitor.
When it is pressed directly, the priority memory (PMR) is called.

(27) 0 TIME

Press to enter numeral 0 or change the display from the fre-
quency display to the clock display when a band unit is con-
nected.
With a band unit connected, while pressing the FUNC button,
when this button is pressed, the clock display appears on the right
side of the display section.
(This feature is disabled in the case of the standard equioment.)

(28) # CALL DIMM

Press to send DTMF signal # or call the call frequency or vary the
illumination level of the display section.
While pressing the PTT button, when this button is pressed,
DTMF signal # is sent out.
While pressing the FUNC button, when this button is pressed, the
illumination level of the display section can be changed in three
steps.
When it is pressed directly, the call frequency is displayed.

(29) D MV K.L

Press to send DTMF signal D or rewrite the memory frequency or
disable writing or button operation as a key lock button.
While pressing the PTT button, when this button is pressed,
DTMF signal D is sent out.
While pressing the FUNC button, when this button is pressed, the
key lock operation is made to disable any button operation.
When it is pressed directly, rewriting or writing in memory is
feasible.

(30) Earphone Jack

To monitor the sound from the radio unit itself, plug the accessory
earphone in to this jack.
With the earphone plugged in, the receiver section of the remote
control is powered, in which state the sound received in the radio
unit can be heard from the earphone. (This feature is not subject
to infrared ray control.)

[Notes]

1. During monitoring, when a key (other than PTT and FUNC)
on the remote control, the monitor sound is muted.
    The lead wire of the earphone works as the antenna of the
receiver section. For this reason, be sure to use the acces-
sory earphone.

2. With the accessory earphone plugged in to the earphone
jack, the receiver section is powered. Therefore, after   use
or when not using, unplug the earphone from the   remote
control to save the battery.

(31) BATT

Load two SUM-3 battery cells in for remote control.
Use of a nickel cadmium battery is not permitted.

(32) Infrared light window

A infrared light is emitted from this window. Direct it to the
receiver of the radio unit. Be careful not to soil it.

26 MHz/100K

25 VFO/STEP

27 MR

29 Rotary channel selector knob

28 AFC/RIT

33 CALL/MUTE

34 T.SQL/T.F

39 PAG/CODE

38 T/DIMM

32 MW

37 VU/ATT

31 REV/+

36 FUNC

30 PRT/SHIFT

35 SUB/K.L

19 MAIN SET

22 PMR OFF.T

21 RF PWR ON.T
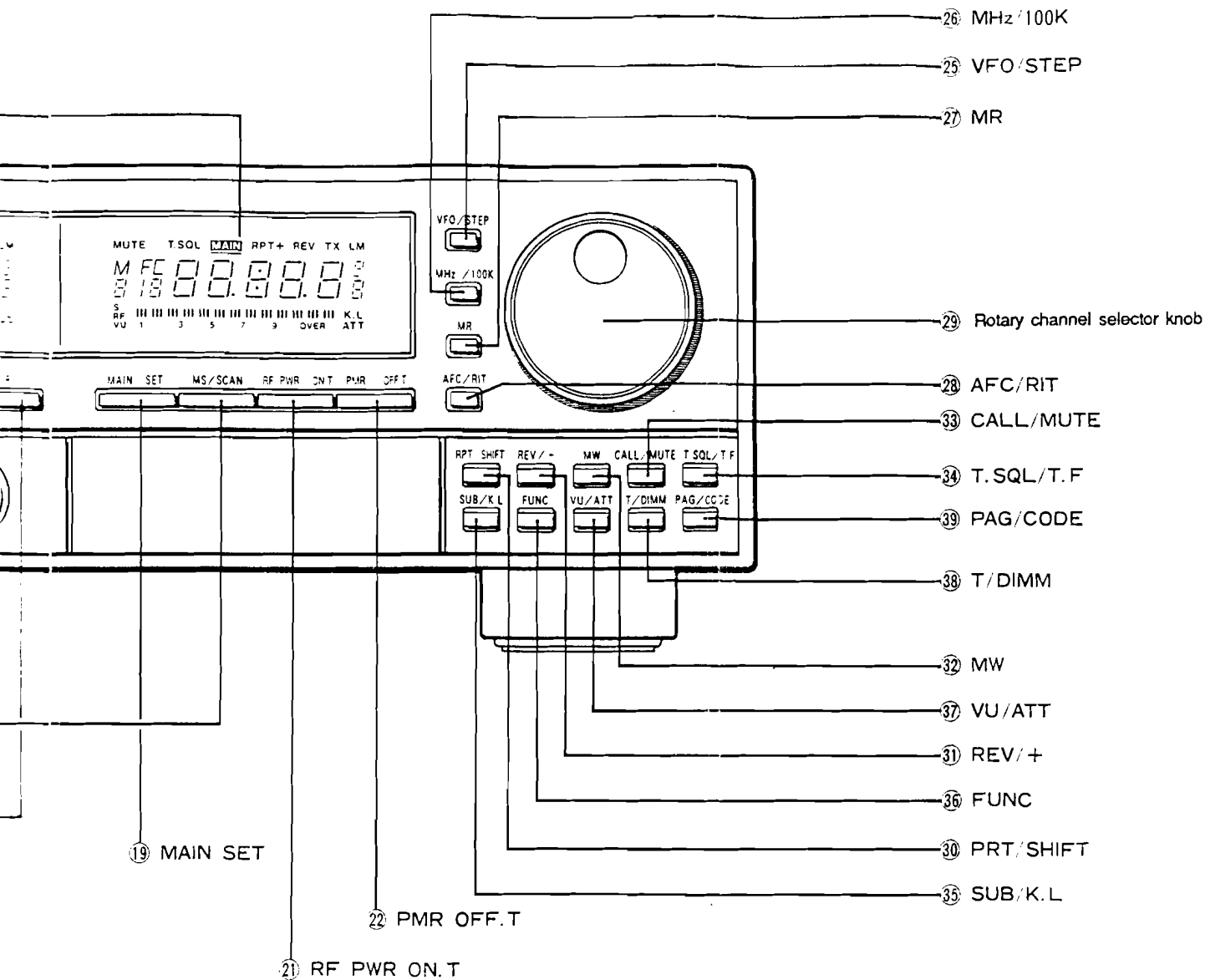
With option unit installed
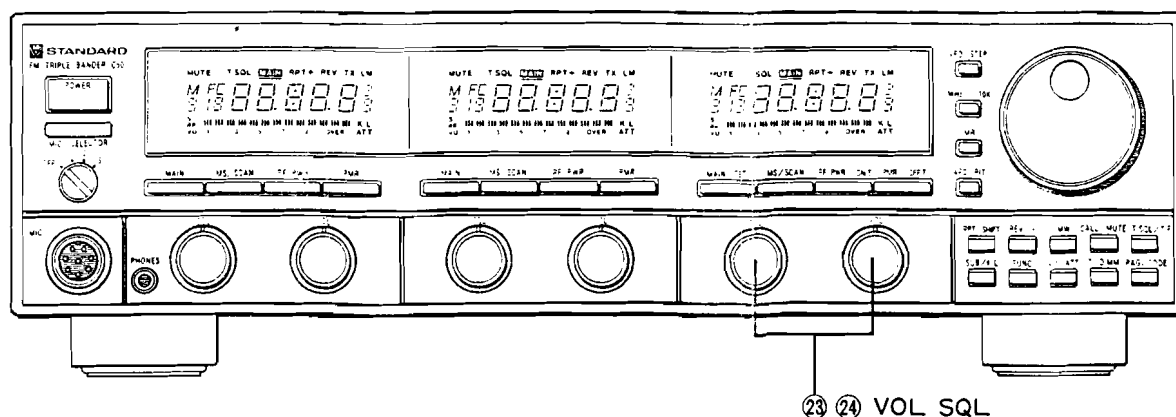
23 24 VOL SQL

[Names of Parts and their Functions]
Radio Unit Itself

Front operation section

⑥ 表示部

Upper section

① POWER

② Remote control infrared light receiver

③ MIC SELECTOR

④ MIC

⑤ PHONE

⑦ ⑬ MAIN

⑧ ⑭ ⑳ MS/SCAN

⑨ ⑮ RF PWR

⑩ ⑯ PMR

STANDARD
FM TRIPLE BANDER C50

POWER

MIC SELECTOR
OFF 1 2 3

MIC

PHONES

MUTE T.SQL MAIN RPT+ REV TX LM

MAIN MS/SCAN RF PWR PMR

MUTE T.SQL MAIN RPT+ REV TX LM

MAIN MS/SCAN RF PWR PMR

⑪ ⑰ SQL

⑫ ⑱ VOL

Speaker
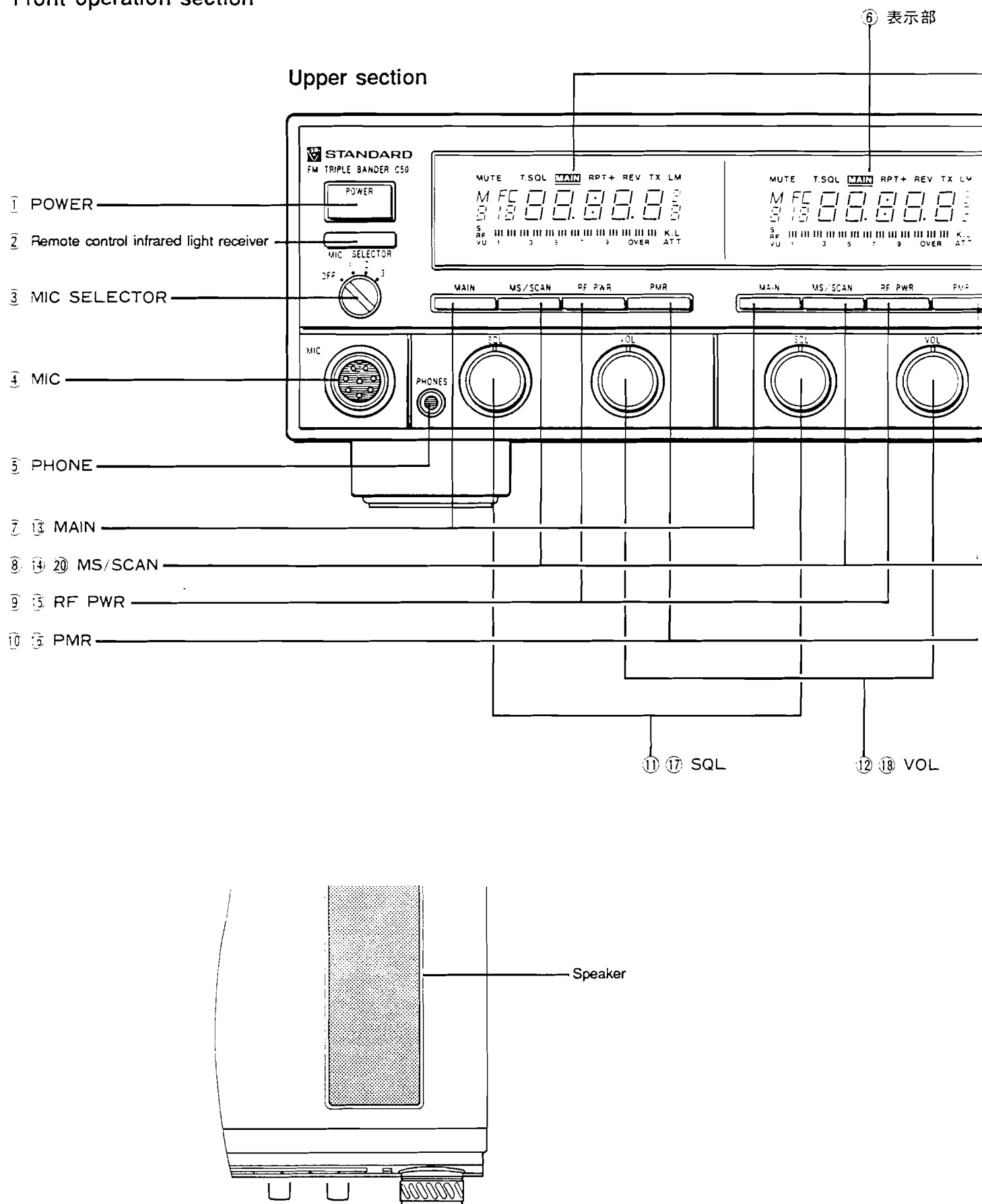
Radio Unit Itself

Front Operation Section

(1) POWER
Power ON/OFF switch. Even with this switch set to OFF, the clock display remains on the left side of the display section. The MAIN SW is not turned OFF thereby.

(2) Remote control infrared light receiver
Do not intercept in front of the receiver, as this causes incorrect remote control operation.

(3) MIC SELECTOR
Switch to designate the operating band when using an optional microphone CMP838G.
Other than OFF setting, the microphone's PTT button is enabled irrespective of the MAIN display on the display section.
OFF: Optional microphone CMP838G is disabled.
1: When the PTT button of the CMP838G is pressed, the 144 MHz band enters the transmission mode.
2: When the PTT button of the CMP838G is pressed, the 430 MHz band enters the transmission mode.
3: When the PTT button of the CMP838G is pressed, the band unit enters the transmission mode. (With band unit connected)

[Advice]
[] Irrespective of the position of the MIC SELECTOR switch, the PTT button of the remote control is always effective for the band of which the MAIN band display appears.

(4) MIC
Terminal to connect the optional microphone CMP838G.
The pin layout of this microphone connection terminal is as shown below.

1. Audio input 2. Speaker output 8. Ground
[Notes]
1. RCL has the same function as does MR.
2. * for band selection

Pins 4, 5, 6, 7 are for UP, DOWN, RCL, CALL, * operation.
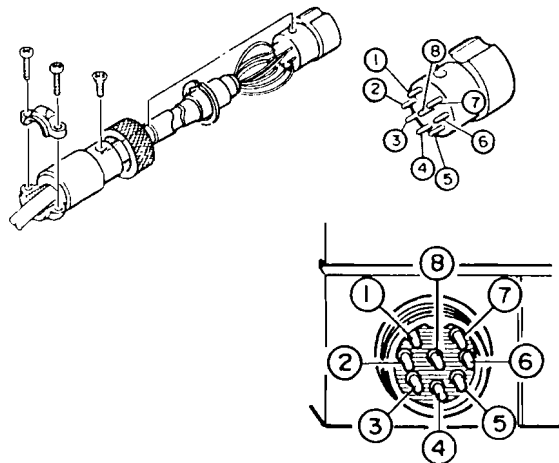
When using a microphone other than specified by our company, make a simplified connection as shown below. However, this connection does not permit RCL and * operation.
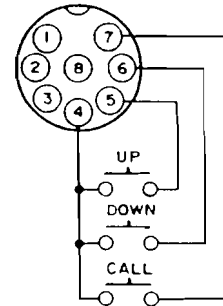
[Note]
When using a microphone other than specified by our company, use of an impedance 600-ohm type should be made.

(5) PHONES
Headphones connection jack (for plug of 3.5 mm dia.)
With the headphones plugged in, the built-in and external speakers turn OFF.

(6) Display section

Left side for 144 MHz band, center for 430 MHz band, and right side for frequency display of that band unit connected or for clock display without a band unit connected.

Display section

(3) Main band sign
(4) Sub band sign
(2) Tone squelch sign
(17) Call frequency sign
(1) Audio mute sign
(16) Function mode sign
(11) Memory call sign or code monitor sign
(12) Memory address number, code memory address number, phrase number or bit rate set mode sign
(13) S meter sign in reception
(14) RF meter sign in transmission
(15) VU meter sign
(25) Frequency display
Display of "1" for 144 MHz, display of "4" for 430 MHz, display for 1,200 MHz, display of "ON" for ON timer, display of "OFF" for OFF timer

(5) Repeater sign
(6) + shift direction sign in repeater mode
(7) Reverse sign in repeater mode
(8) Transmission sign
(9) Transmission output sign L (low power)
(10) Transmission output sign M (middle power)
(19) Paging (P) or code squelch (C) sign
(20) RIT (100 Hz order) sign with band unit (1,200 MHz) connected
(21) Key lock sign
(22) Reception sensitivity attenuator sign
Hz表示
(23) Frequency display (operating frequency, shift frequency, tone frequency, clock, code)
(24) Colon mark in clock display
MHz mark
(18) Meter (S, RF or VU meter)

(7)/(13) MAIN

Main band selection buttons. In the sub band setting mode, either button serves to designate the sub band.
"MAIN" is displayed on the display section.

(8)/(14)/(20) MS/SCAN

Press to set the memory scan operation, the MHz scan operation, the busy scan operation or the pause scan operation.
During scanning, when any is pressed after pressing the FUNC button, selection is possible between busy scan operation and pause scan operation. (No display for busy scan and pause scan.)
Initially, the pause scan operation is set.

(9)/(15) RF PWR

Press to select between three steps Hi, Mid, Lo for transmission output. Initially, the transmission output is set to "Hi" power. When returning to the initial setting, a single beep sound (B) is emitted to indicate this returning.

(10)/(16) PMR

Press to call or cancel the priority memory.
When calling the priority memory, "M.P" appears on the display section.
Of the 144 MHz band, the initial setting is at 145.000 MHz (simplex mode).
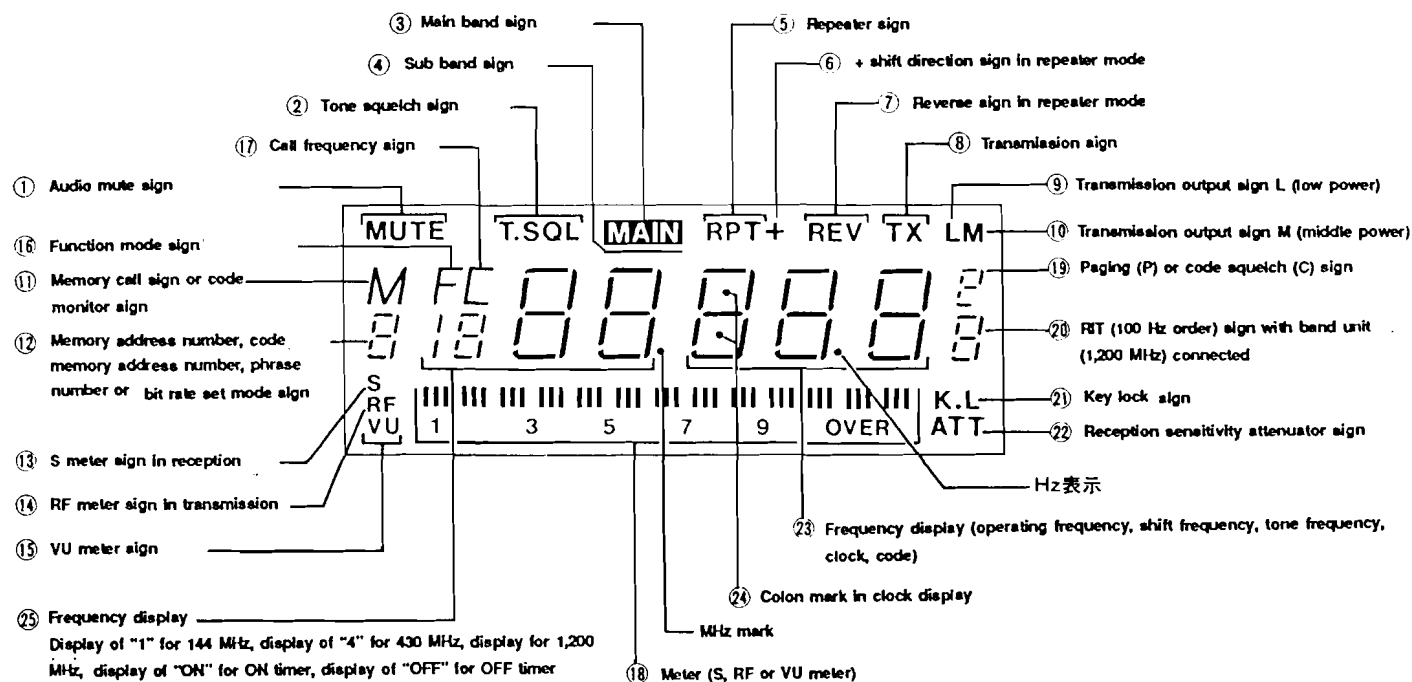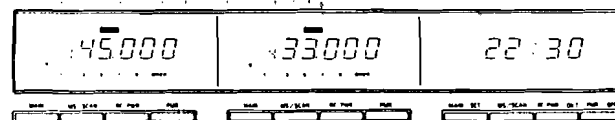OF the 430 MHz band, the initial setting is at 439.520 MHz (repeater mode).
Of the 1,200 MHz band, the initial setting is at 1,292.060 MHz (repeater mode).
Of the 28 MHz band, the initial setting is at 29.680 MHz (repeater mode).

(11)/(17) SQL

Squelch knobs. Rotate to eliminate noises peculiar to FM.
When either knob is rotated clockwise from the state that it is fully rotated counterclockwise, the noise disappears. Stop the knob at a point at which the noise disappears.

(12)/(18) VOL

Volume control knobs, either of which is an electronic type operable from the remote control.
Rotating either knob clockwise causes increase in volume, whereas rotating it counterclockwise causes decrease in volume.

(19) MAIN SET

Press to set or cancel the time setting operation or set the main band.
With a band unit connected, this serves to set the main band.

(21) RF PWR ON.T

Press to set or cancel the ON timer setting mode or select between three steps of high, middle and low for the transmission output.
With a band unit connected, this serves to select for the transmission output.
Moreover, for ON timer operation, press this button after pressing the FUNC button, at which time the display section enters the ON timer setting mode.

(23)/(24) VOL and SQL
(not provided for standard equipment)

Volume control and squelch knobs with a band unit connected.
Their operation is the same as that of the VOL and SQL knobs for 144 MHz or 430 MHz band.
The VOL and SQL knobs and their associated panel are accessories of the C50/C50D in a band addition kit.

(25) VFO/STEP

Press to select VFO or tuning step.
In the VFO mode, its associated green LED lights, in which state the frequency (operating frequency, shift frequency, tone frequency, etc.) can be varied by the rotary channel selector dial.
When the green LED is OFF, feasible are such features as tuning step, memory address number, clock time adjustment, etc., in which case the frequency cannot be changed.
After pressing the FUNC button, when this button is pressed, the tuning step select operation is engaged.
A suitable one is selectable from six tuning steps, 5 kHz, 10 kHz, 12.5 kHz, 20 kHz, 25 kHz and 50 kHz. However, to the band unit 1,200 MHz, two tuning steps of 10 kHz and 50 kHz only are given.

[Advices]

[] The memory call mode engaged is canceled keeping the memory frequency.
[] In the memory call mode, when the MR button is pressed again, the memory frequency returns to the frequency value prior to call and thus the memory call mode is also   canceled.

(26) MHz/100k

Press to select between tuning steps.
For 1 MHz step, its associated green LED lights. After that, when the FUNC button is pressed, the frequency can be varied in units of 100 kHz step.

(27) MR

Press to call the memory address number.
The memory address can be called using the rotary channel selector dial and numeral keys on the remote control.
When that memory location is blank, "M" and the address number display flicker.

(28) AFC/RIT

Button enabled only with a band unit (1,200 MHz) connected, which selects between AFC (auto) and RIT (manual).
For AFC, its associated green LED lights. For RIT, its associated red LED lights.
After pressing the FUNC button, when this button is pressed, the RIT (manual) operation is engaged.

(29) Rotary channel selector dial

Dial for frequency/memory address number setting, clock time setting, shift frequency, tone frequency, code memory address call, etc.

(30) PRT/SHIFT

Press to call the repeater mode or call the shift frequency in the repeater mode.
After pressing the FUNC button, when this button is pressed, the shift frequency is called in the repeater mode. When it is pressed once again, the tone frequency is called. (With CTN50 connected)

[Note]

Without an optional tone squelch unit CTN50 connected, the tone frequency cannot be called.

(31) REV/+

Press to call the reverse operation or the shift direction "+" in the repeater mode.
After pressing the FUNC button, when this button is pressed, the shift direction "+" is called in the repeater mode.

[Note]

In the shift frequency or tone frequency call mode, this button is disabled.

(32) MW

Press to rewrite or write in memory.

(33) CALL/MUTE

Press to call the call frequency or set or cancel the audio signal mute mode.
After pressing the FUNC button, when this button is pressed, the audio signal mute mode is set or canceled. In the mute operation, "MUTE" is displayed, at which time the volume of the corresponding band is reduced about 15 dB.

(34) T.SQL/T.F

Press to set or cancel the tone squelch operation or call the tone frequency.
After pressing the FUNC button, when this button is pressed, the tone frequency subject to tone squelch is called.

[Note]

Without an optional tone squelch unit CTN50 connected, the tone squelch operation cannot be set and the tone frequency cannot be called.

(35) SUB/K.L

Press to set the sub band mode or set or cancel the key lock function.
After pressing the FUNC button, when this button is pressed, the key lock function is set or canceled.

(36) FUNC

Press to engage the function mode.
After pressing this button, when another button is pressed, the function represented by the letters written at the right side runs.
When the FUNC button is pressed, "F" appears on the display section. In this case, however, when no further operation is made, the function mode is canceled about 3 seconds later.

[Notes]

1. Even when this FUNC button is pressed in ON timer or OFF   timer time setting, "F" does not appear.
2. Even when the FUNC button on the remote control, "F" does   not appear.

(37) VU/ATT

Press to change to the VU meter mode or lower the reception sensitivity.
After pressing the FUNC button, when this button is pressed, the reception sensitivity is lowered about 10 dB.
When it is pressed directly, the VU meter mode is engaged.

(38) T/DIMM

Press to change the display from the frequency display to the
clock display for the band unit connected or change the illumina-
tion of the display section in three steps.
After pressing the FUNC button, when this button is pressed, the
illumination of the display section can be varied in three steps.

Bright — Half dark — Dark

(39) PAG/CODE

Directly press to select between paging, code squelch and normal
operation.
After pressing the FUNC button, when this button is pressed, the
3-digit code call mode is engaged.

[Note]
Without an optional DTMF unit CTD 50 connected, this
feature is unavailable.

40 VR to regulate audio signal for packet communications
41 VR to regulate transmission modulation degree for packet

Rear Operation Section

62 430MHz ANT

61 144MHz ANT
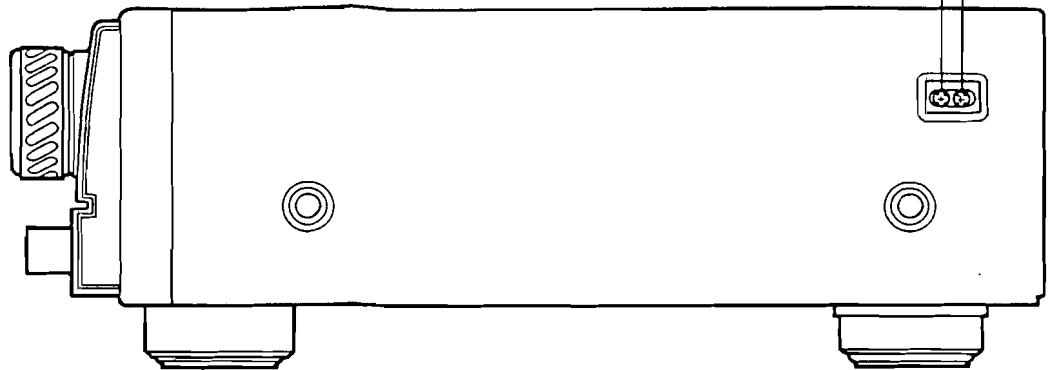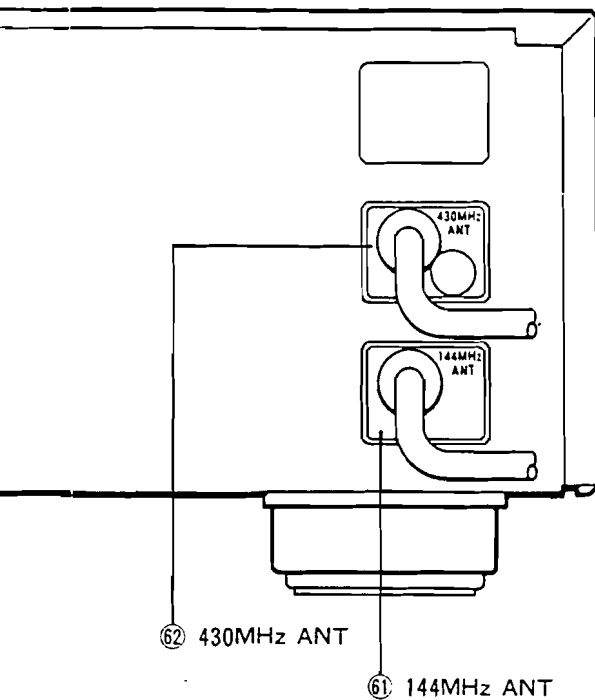
With optional unit installed

58 59 60

(C50D)

63 Cleaning fan

Rear side.

65 Reset terminal

Names of Parts and their Functions
Radio Unit Itself

- ㊹ EXT SPKR
- ㊺ EXT SPKR
- ㊻ EXT SPKR
- ㊼ EXT SPKR

- ㊼ VIDEO IN

- ㊽ IF OUT

- ㊶ ACC 1

- ㊻ ACC 2

- ㊾ REC

- ㊼ REMOTE ANT

- ㊿ Unit installation location

ACC1
ACC2
REC
EXT SPKR
144   430
28/1.2G   ALL
CONTROL   VIDEO IN   IF OUT
REMOTE ANT
AC100V 50/60Hz
MAIN SW
ON
OFF
FUSE 4A
DC OUT 13.8V
GND
DC IN 13.8V

- ㊹ GND

- ㊺ DC IN 13.8V

- ㊿ FUSE 4A

- ㊿ MAIN SW

- ㊺ DC output terminal

- ㊸ AC 100V 50/60Hz
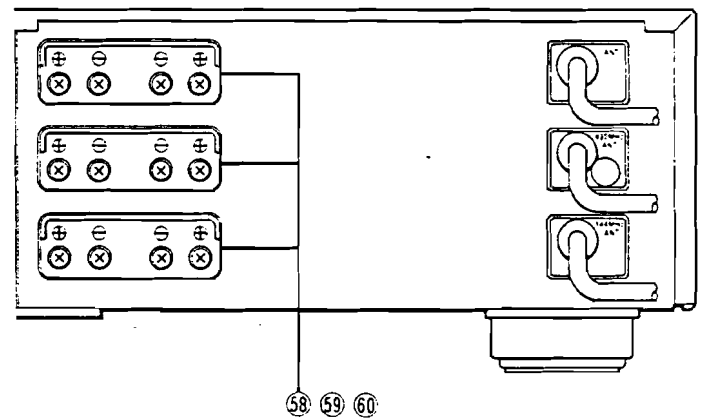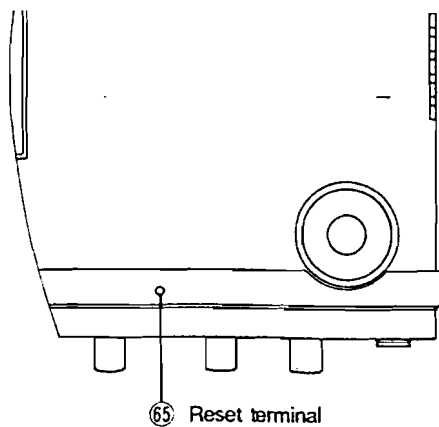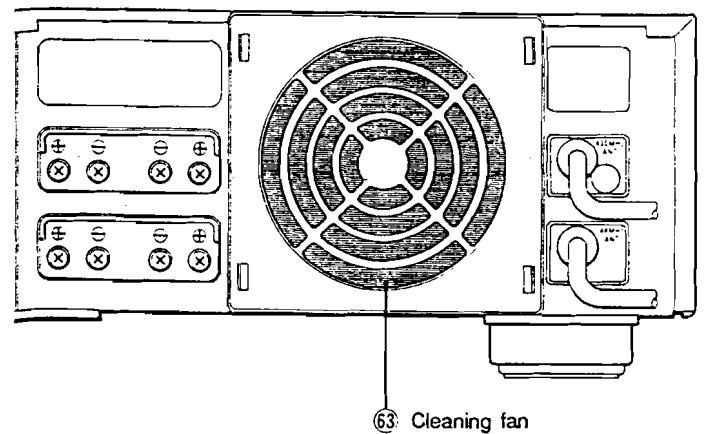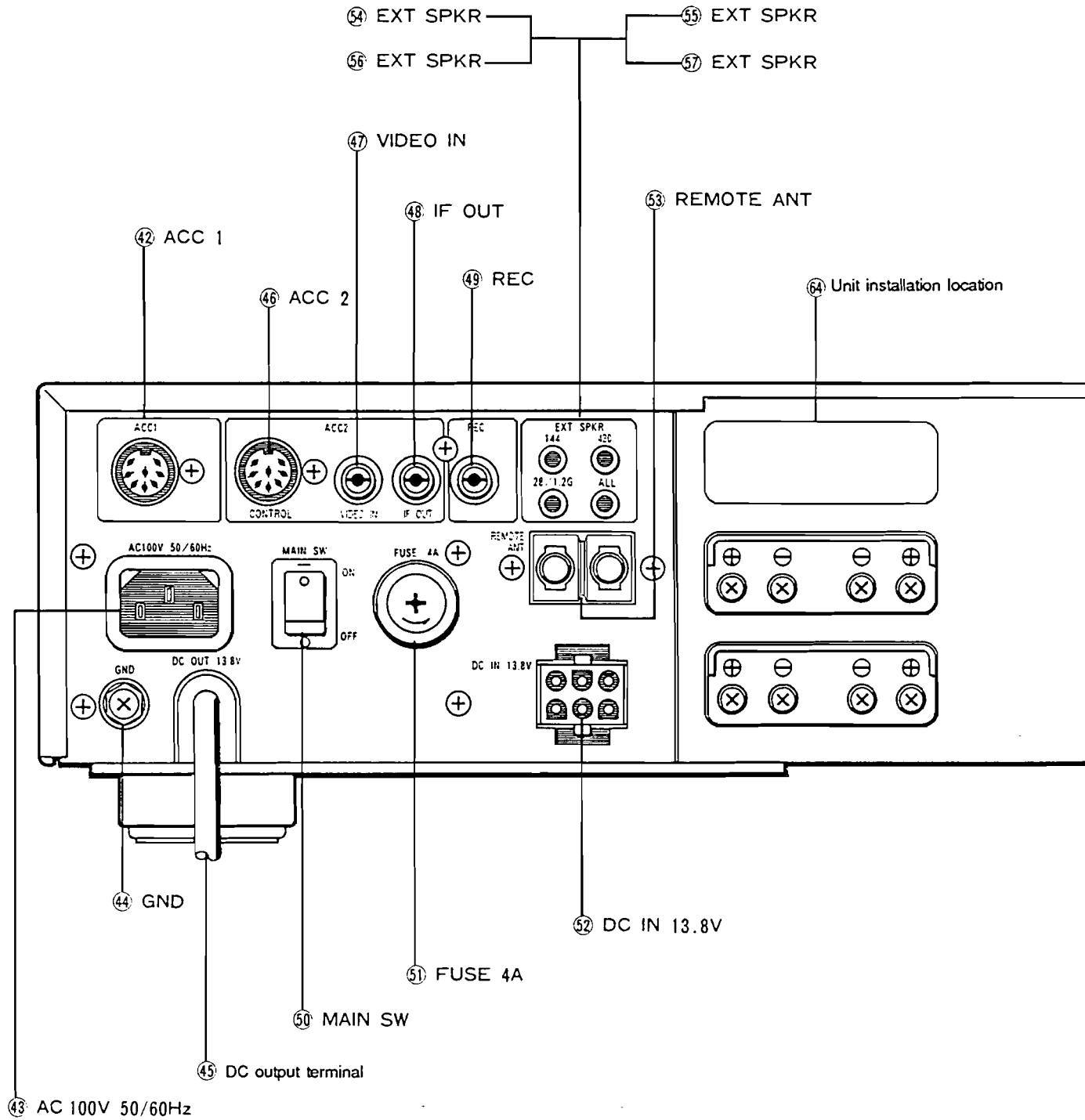
Lateral Side

(40) VR to regulate audio signal for packet communication
Regulation is possible according to the input level of TNC. Independent from volume control knobs on the radio unit.

(41) VR to regulate transmission modulation degree for packet communications.

Rear Operation Section.

(42) ACC1
Terminal to connect between radio unit and TNC for packet operation.

(43) AC 100 V 50/60 Hz
AC inlet, to which accessory AC power cord is inserted.

(44) GND
Ground terminal. Be sure to ground.

(45) DC OUT
DC output terminal from which the DC voltage from the switching regulator is taken out.
Normally (for operation on AC 100 V), the DC cord should be inserted to the DC IN 13.8 V terminal.

(46) ACC2
Control terminal from which power, etc. can be taken out and therefore to which external equipment such as ATV, etc. is connected.

(47) VIDEO IN (only with 1,200 MHz band unit connected)
Terminal through which video signal modulation is applied to the 1,200 MHz band unit, and from which video signal can be input.

(48) IF OUT (only with 1,200 MHz band unit connected)
Terminal from which the IF signal (55.05 MHz) from the band unit is taken out.

(49) REC
Terminal from which audio signal is taken out and therefore to which audio equipment such as tape recorder, etc. is connected.
Output level of about 450 mV. (with 100 kohm load)

(50) MAIN SW
Main AC power switch, which is normally set to ON.
For operation on external DC power, be sure to set this switch to OFF.

(51) FUSE 4A
Holder of 250 V/4 A fuse.
Never use any fuse other than 250 V/4 A, as it is very dangerous.

(52) DC IN 13.8 V
Terminal to connect external DC power supply, of which the rated input DC voltage is 13.8 V +/-5 %.
Never apply any voltage other than DC 13.8 V, as it causes failure.
For C50, a DC power of more than 8 A is necessary. (For simultaneous transmission of two waves, a DC power of more than 8 A is necessary.)
For C50D, a DC power of more than 15 A is necessary.

(53) REMOTE ANT
Terminal to connect the accessory remote control antenna.
For this antenna, be sure to use the accessory remote control antenna. Unless the antenna is connected, transmission is unfeasible from the remote control and reception sound cannot be monitored.

(54) EXT SPKR's 144
For external speaker for 144 MHz band with impedance of 8 ohms
From the built-in speaker, the sound of another band is heard.
With headphones plugged in, the external speaker does not work.

(55) EXT SPKR's 430
For external speaker for 430 MHz band with impedance of 8 ohms.
From the built-in speaker, the sound of another band is heard.
With headphones plugged in, the external speaker does not work.

(56) EXT SPKR's 28/1.2 (optional band unit)
For external speaker for 28 MHz or 1,200 MHz band unit.
From the built-in speaker, the sound of another band is heard.
With headphones plugged in, the external speaker does not work.

(57) EXT SPKR's ALL
For external speaker for any band with impedance of 8 ohms.
From the built-in speaker, no sound is heard. With headphones plugged in, the external speaker does not work.

(58)/(59)/(60)
Terminals to supply power to respective units.
**Never let any bit of metal piece enter to any screw hole.
Never disassemble such as by removing a screw, etc.
A unit other than specified cannot be connected.**

(61) 144MHZ ANT
With connector equipped coaxial cable for 144 MHz band, which cable is connected with the coaxial cable running from the antenna.
[Note]
Never perform transmission without the antenna connected, as it may cause failure.

(62) 430MHz ANT
With connector equipped coaxial cable for 430 MHz band, which cable is connected with the coaxial cable running from the antenna.
[Note]
Never perform transmission without the antenna connected, as it may cause failure.

(63) Cooling fan
For heat sink, with which C50D only is provided.
[Note]
Avoid putting such a matter as cloth, etc. on the cooling fan, as this degrades the cooling effect. Locate the unit in a highly ventilated place without objects placed around it. Attachment of dusts to the anti-dust filter of the cooling fan results in lower cooling effect. To avoid this problem, clean the anti-dust filter periodically.

(64) Band unit install station
Station to install the 28 MHz or 1,200 MHz band unit.
Never install a unit other than specified to an unspecified place.
Rear Section.

(65) Reset terminal
Terminal to reset the microprocessor.
Gently push by a pointed thin nonmetallic rod, and the display section is extinguished (the clock display disappears momentarily) and the microprocessor is reset.
For this, the POWER switch should be ON.
In this case, however, any memorized frequency is not erased.

[List of Operation Buttons]

Button Function I (remote control)

Function	Press while pressing the FUNC button.	Display on display section
Paging operation or code squelch operation ON/OFF	1 PAG	P C
Code call ON/OFF	2 CODE	C—
Tone squelch operation ON/OFF	3 T.SQL	T.SQL
Packet mode setting ON/OFF	4 PACKET	PAC
Voice memory call ON/OFF (with option connected)	5 VOICE	
VU meter operation ON/OFF	6 VU	VU
Repeater operation ON/OFF	7 RPT	RPT
Reverse operation in repeater mode	8 REV	REV
Shift direction setting to "+"	9 +	+
Clock display operation (with option connected)	0 TIME	
Transmission output selection	A CLR PWR	M.L.
Reception sensitivity selection	B MR ATT	ATT
Program scan operation or 1 MHz scan operation ON/OFF	C MS PS	
Key lock function	D MW K.L	K.L
Audio signal mute operation	* PMR MUTE	MUTE
Display section illumination selection	# CALL DIMM	
Beep sound ON/OFF	SQL OFF	

Function	Button name
C50/C50D power ON/OFF	POWER
C50/C50D volume control	VOL
Frequency up/down	CH MHz
Squelch OFF operation	SQL OFF
144 MHz band selection	144
430 MHz band selection	430
28 MHz band/1,200 MHz band selection	28/1.2G

Button Functions II (radio unit)

Function (when directly pressed)	Button name	Function (when pressed after pressure of FUNC button)
Power ON/OFF	POWER	...
Band setting	MAIN	
Transmission output selection Hi-Mid-Lo	RF PWR	
Band selection (with option connected)	MAIN SET	Time setting (for clock display)
Transmission output selection (with band unit connected)	RF PWR ON.T	ON timer call
Priority memory call (with option connected)	PMR OFF.T	OFF timer call

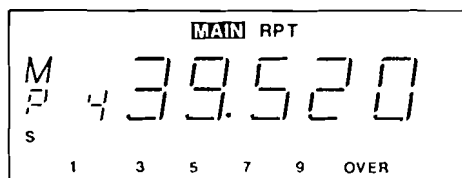| 機　　能 （直接押した時の機能）	ボタン名	
Mode cancellation	VFO/STEP	CH step selection
1 MHz step	MHz/100k	100 kHz step
Memory call	MR	
AFC (with option connected)	AFC/RIT	RIT (only with 1,200 MHz band unit connected)
Repeater mode	RPT/SHIFT	Shift frequency call or tone frequency call in repeater operation (only with CTN50 connected)
Reverse operation in repeater mode	REV/+	Shift direction selection
Memory writing	MW	
Call frequency call	CALL/MUTE	Mute operation
Tone squelch operation	T.SQL/T.F	Tone frequency call (with CTN50 connected)
Sub band setting	SUB/K.L	Key lock operation
FUNC		
VU meter operation	VU/ATT	Reception sensitivity selection
Clock display	T/DIMM	Illumination selection
Paging operation or squelch operation	PAG/CODE	Code display (with CTD50 connected)
Memory scan	MS/SCAN	MHz scan / During scan, selection between busy scan and pause scan

When pressed while pressing the FUNC button

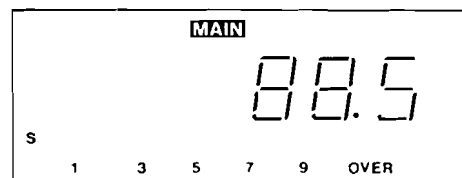| 機　Function　能	Button name
Voice memory all-clear, power OFF to ON	POWER
Display OFF	MAIN (MAIN SET)
Remote control transmission inhibition	VFO/STEP
Remote control reception monitor inhibition	MHz/100K
Transmission frequency correction with 1,200 MHz band unit connected	AFC/RIT
Beep sound 7-emission/single-emission selection in signal incoming in paging mode	PAG/CODE
Reception recording with CVM50 connected	REV/+

Display Examples for Different Functions

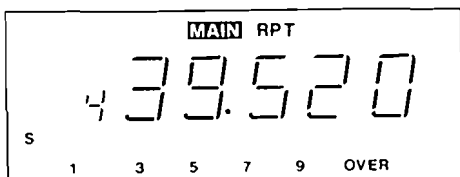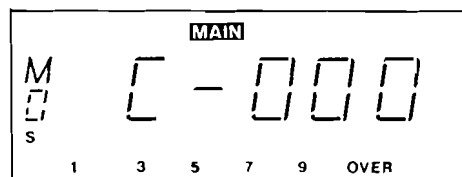The following shows display examples for respective functions:

PMR状態

MAIN RPT
M
P   439.520
S
1 3 5 7 9 OVER

Tone frequency (with CTN50 connected) (repeater mode)

MAIN
88.5
S
1 3 5 7 9 OVER

Repeater mode (shift direction "-")

MAIN RPT
439.520
S
1 3 5 7 9 OVER

Code

MAIN
M
D   C-000
S
1 3 5 7 9 OVER

Repeater mode (shift direction "+")

MAIN RPT+
439.520
S
1 3 5 7 9 OVER

Packet mode

MAIN
P A C
S
1 3 5 7 9 OVER

Repeater mode (reverse)

MAIN RPT REV
434.520
S
1 3 5 7 9 OVER

OFF band (repeater mode)

MAIN
OFF
S
1 3 5 7 9 OVER

Call frequency

MAIN
C
433.000
S
1 3 5 7 9 OVER
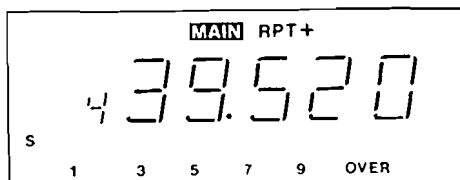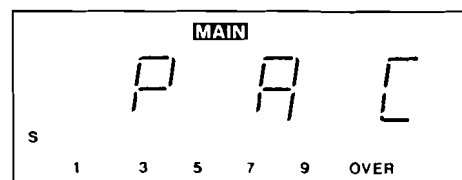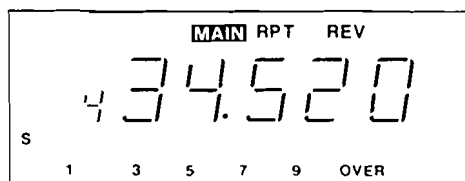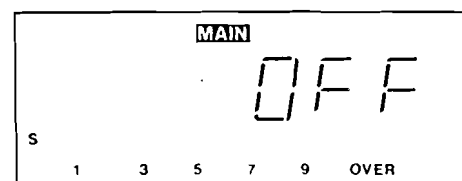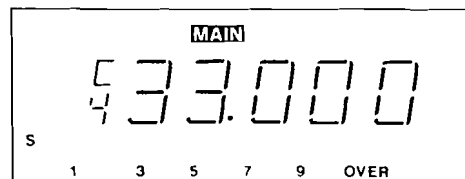
Memory frequency call mode (already memorized)

MAIN
M
D   433.200
S
1 3 5 7 9 OVER

Shift frequency

MAIN
5.000
S
1 3 5 7 9 OVER
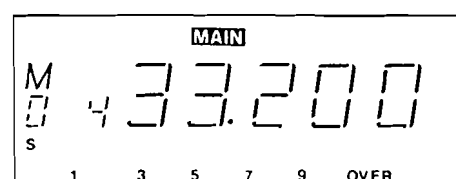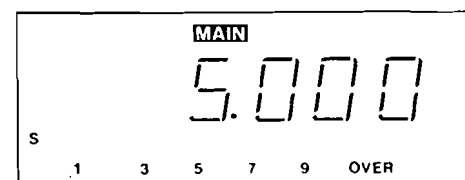
Memory frequency call mode (no memory)

Flickers →

MAIN
M
D   433.200
S
1 3 5 7 9 OVER
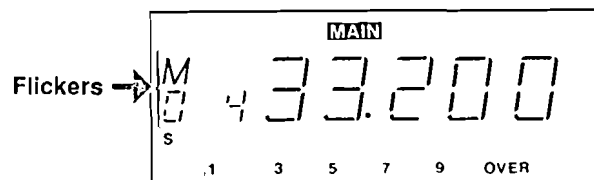
Memory frequency rewrite mode

Flickers → M 433.200
MAIN
S
1 3 5 7 9 OVER

Tuning step

MAIN
20.0
S
1 3 5 7 9 OVER

Sub band setting mode

Flickers ↓

433.000
S
1 3 5 7 9 OVER

PTT ON (high power in transmission)

MAIN   TX
433.200
RF |II |II |II |II |II |II |II |II |II |II |II |II
1 3 5 7 9 OVER

Sub band mode display

Flickers ↓

MAIN
433.000
S
1 3 5 7 9 OVER

Clock display

22:30
↑
Lights or flickers

[] Lighting — During time setting
[] Flickering — Normal status
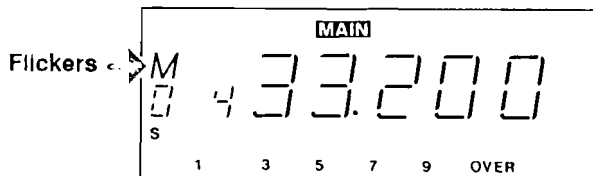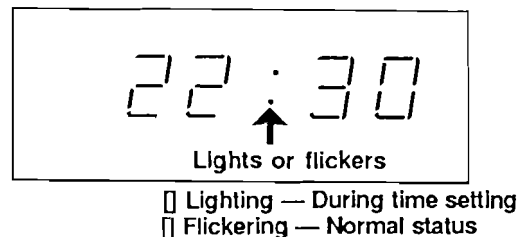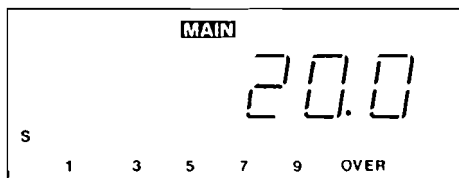
Display during ON timer setting

on 0:00
↑
Lights or does not appear

[] Lighting — Valid
[] Not appearing — Invalid
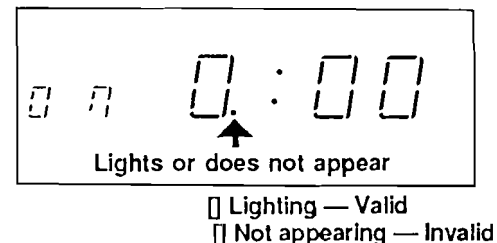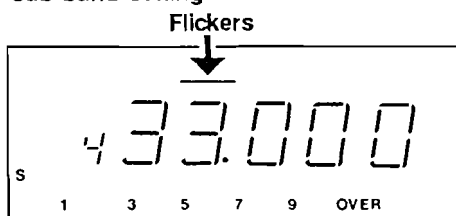
ON timer time display

on 8:00
↑
Lights
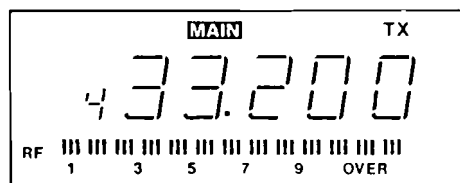
Display during OFF timer setting

oF 8:00
↑
Lights or does not appear

[] Lighting — valid
[] Not appearing — Invalid
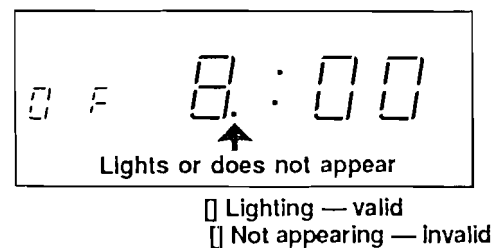
OFF timer time display

oF 0:00
↑
Lights
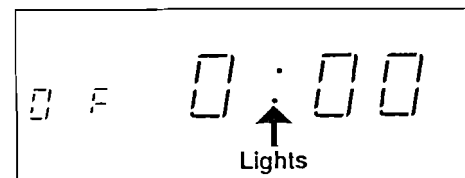
[Radio Unit Setup]

1. Selecting between main bands
—Setting the main band—

A main band permits signal transmission by operation of the remote control and enables each operation button.

The C50/C50D, normally provided with two bands, has a function to set the sub band, thus permitting effective use of three bands with a band unit purchased. Using this function, make the best use of the C50/C50D.

[Procedure]

When the 144 or 430 button on the remote control is pressed, "MAIN" appears on the display section corresponding to the button pressed.

144   430

[Procedure]

When the corresponding MAIN button is pressed, "MAIN" lights to indicate that that band is the main band.

Lights

MAIN

$4 33.000$

s
1   3   5   7   9   OVER

When the * button on the optional microphone CMP838G is pressed, the main band changes in order.
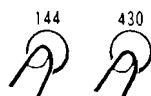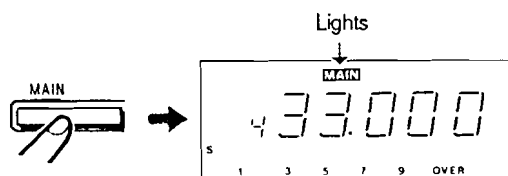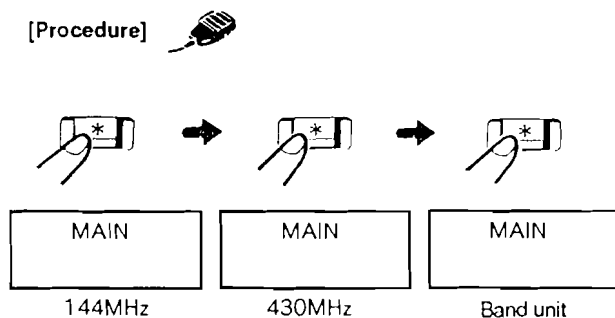
[Procedure]

MAIN	MAIN	MAIN
144MHz	430MHz	Band unit

Without a band unit connected, the main band changes alternately between 144 MHz and 430 MHz.

Setting the Sub Band Set Mode

The sub band set mode is used in changing the sub band frequency, etc.

Unless any operation is made for about 5 seconds after the sub band set mode is engaged, the sub band set mode is automatically canceled.

When the SUB button is pressed once again, the sub band set mode is canceled.

[Procedure]

[For standard equipment]

When the SUB button on the remote control is pressed, "MAIN" for the band of which "MAIN" does not appear starts flickering to indicate that the sub band mode is entered.

For operation in the radio unit side, press the SUB/K.L button.

While the "MAIN" is flickering, each button operation is feasible in the sub band side.

Flickers   Disappears unless operation is made for 5 seconds.

SUB   ➔ MAIN   ➔

           Sub band mode   Sub band invalid
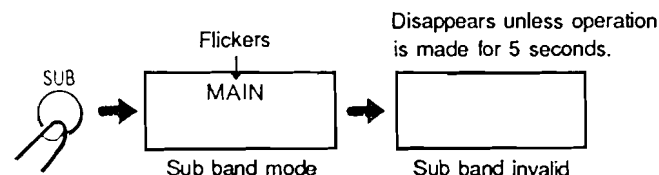
[Procedure]

[With band unit connected]

[1] When the SUB button on the remote control is pressed, the bar signs under the "MAIN" signs of the two bands of which the "MAIN" signs do not appear starts flickering. (This indicates the sub band set mode.)

For operation in the radio unit side, press the SUB/K.L button.

After that, press the MAIN button of the band to be taken as the sub band.

Sub band mode

Flickers   SUB   Flickers

(SUB/K.L)
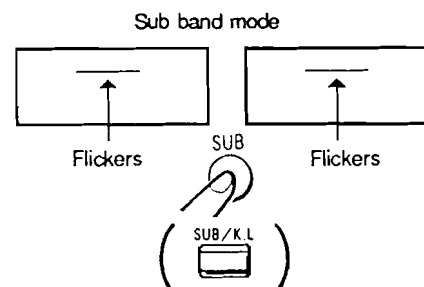
[2] Press the MAIN button of the band to be taken as the sub band.

[3] The bar signs disappear, the "MAIN" sign starts flickering to indicate that the sub band mode is engaged.

While the "MAIN" sign is flickering, each button operation is feasible in the sub band side.

Sub band set mode

28 1 2G   ➔   MAIN

                Flickers
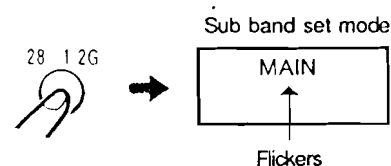
2. Volume control method

Press a VOL button on the remote control to obtain your favorable volume.

Otherwise, rotate the SQL knob on the radio unit fully counter-clockwise, thereupon rotate the VOL knob to obtain your favorable volume.
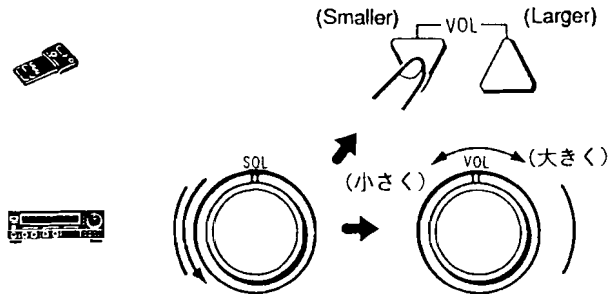
[Volume control of main band]

[Procedure]
[1] Set the main band.

[2] When a VOL button on the remote control, the VOL knob   of the C50/C50D itself automatically rotates to control the volume. Pressing the "   " button causes decrease in volume, while pressing the "   " button causes increase in volume.
It is also possible to control the volume by rotating the VOL knob on the radio unit directly by hand.
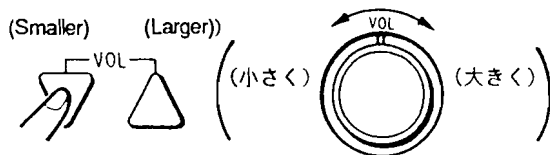
[Note]
During remote control operation, do not handle the VOL knob on the radio unit, which is electrically driven.

[Volume control of sub Band]

[Procedure]
For standard equipment
[1] Press the SUB button on the remote control to set the   sub band. Thus, the "MAIN" sign starts flickering.   Press the SUB/K.L button on the radio unit.

[2] When a VOL button "   " or "   " on the remote control unit is pressed, the VOL knob on the radio unit automatically rotates to control the volume.
It is also possible to control the volume by rotating the VOL knob on the radio unit directly by a hand.
The sub band set mode is canceled about 5 seconds later from the stop of operation.
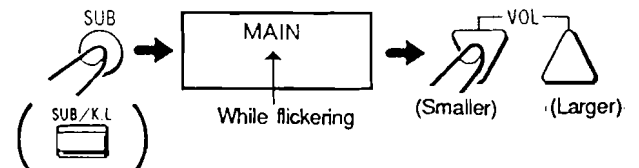
With band unit connected

[Procedure]
[1] When the SUB button is pressed, the bar sign under "MAIN" starts flickering. Without operation for about 3 seconds, the status prior to pressure of the SUB button is entered. On the radio unit, press the SUB/K.L button.

[2] Press the MAIN button of the band to be taken as the sub band. Thus, the bar sign stops flickering and the "MAIN" starts flickering instead.
With this, the sub band setting is completed.

[3] When a VOL button "   " or "   " on the remote control unit is pressed, the VOL knob on the radio unit automatically rotates to control the volume.
The sub band set mode is canceled about 5 seconds later from the stop of operation.

27
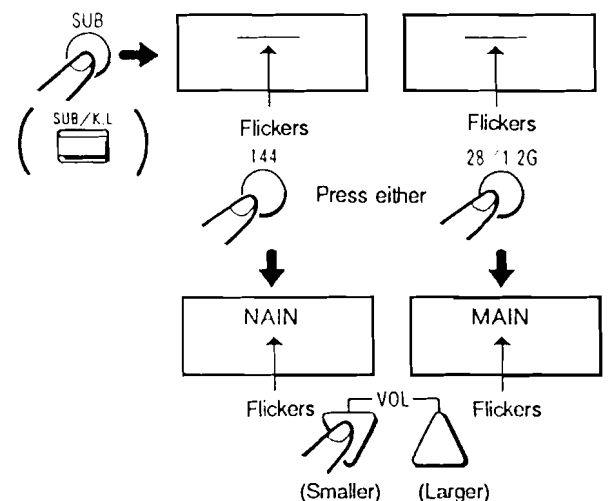
3. SQL adjustment method

The SQL knob is not driven electrically.

Set the dial to around "2".

Rotate the dial to a point at which noise disappears.

[Note]
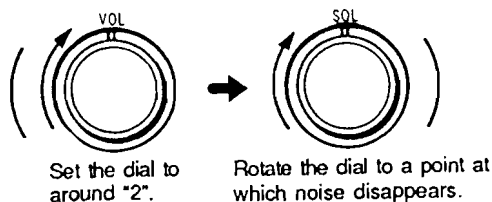Do not rotate it excessively clockwise, as this disables reception of weak signals.

4. Frequency setting method

Different methods of frequency setting are available. Make a choice suitable to the application.

Two methods are available: pressing numeral keys on the remote control to set your desired frequency or using the rotary channel selector dial.

●Setting to 435.47 MHz

Using the rotary channel selector dial
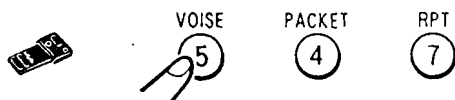
Rotary channel selector dial
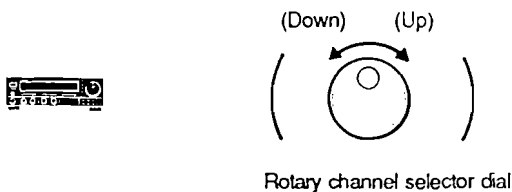
Frequency setting of main band

[Frequency setting by remote control]
When numeral buttons on the remote control is pressed, figure appears correspondingly on the display section.

Example:
When setting 433.08
1. Press numeral key "3".   3 . ◯◯
2. Press numeral key "0".   3 . 0 ◯
3. Press numeral key "8".
4. Beeps   3 . 0 8
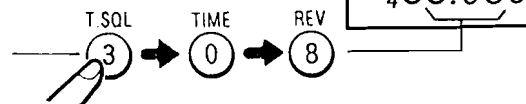
When entering 1293.02
1. Press numeral key "9".   129◯.◯◯
2. Press numeral key "3".   1293 .◯◯
3. Press numeral key "0".
4. Press numeral key "2".   1293 . 0 ◯
5. Beeps   1293 . 0 2
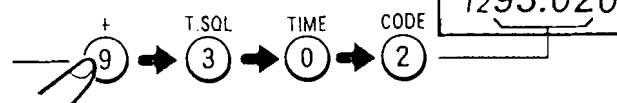
It beeps to inform the completion of setting.

[Advice]
[] For operation with 144 MHz, 430 MHz and option 28 MHz bands, entry begins at the order of units of MHz.
[] For operation with 144 MHz, 430 MHz and option 1,200 MHz bands, entry begins at the order of tens of MHz.

[Note]
On the way of frequency setting, when the rotary channel selector is rotated, the frequency value goes up or down from that prior to setting.

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[Method of frequency setting by CH MHz buttons on remote control]

When a CH MHz button on the remote control is pressed, the frequency varies in units of 20 kHz step (initial setting).
Pressing the " " button causes increase-up in frequency, whereas pressing the " " button causes decrease-down in frequency.

(Down)   (Up)

[Method of frequency setting by rotary channel selector dial]

When the rotary channel selector dial is rotated on the radio unit, the frequency varies in units of 20 kHz step (initial setting).
Clockwise rotation causes increase-up in frequency, whereas counterclockwise rotation causes decrease-down in frequency.

(Down)   (Up)

Rotary channel selector dial

[Method of frequency change in units of 1 MHz step]

[Procedure I]
[1] While pressing the FUNC button on the remote control unit, when a CH MHz button " " or " " is pressed, the frequency goes up or down in units of 1 MHz step.

Up or down in units of 1 MHz step

[Advice]
When "F" appears on the display section on the radio unit, the frequency goes up or down in units of 100 kHz step.

[Procedure II]

[1] After pressing the MHz/100K button on the radio unit, when the rotary channel selector dial is rotated, the frequency goes up or down in units of 1 MHz step.

(Down)   (Up)

LED lights green.   Rotary channel selector dial
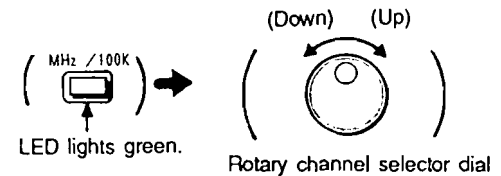
When the green LED of the button is lighting, the frequency changes in units of 1 MHz step.

[Method of frequency change in units of 100 kHz step]

When the LED of the MHz/00K button on the radio unit is lighting, when the rotary channel selector dial is rotated after pressing the FUNC button on the radio unit ("F" appears on the display section), the frequency varies in units of 100 kHz step.

(Down)   (Up)

When LED is lighting   While lighting   Rotary channel selector dial

"F" disappears about 3 seconds later from the handlingstop of the rotary channel selector dial, and the 100 kHz step frequency change is canceled.

[Advice]
Even when the radio unit is in the MHz/100kHz mode, the frequency can be varied up/down by pressing directly a CH MHz button on the remote control (in units of normal tuning step).

[Method of frequency setting of sub band]

1. For standard equipment
When the SUB button on the remote control is pressed, the corresponding sign "MAIN" starts flickering.
On the radio unit, press the SUB/K.L button.
The frequency can be thus varied up/down by the rotary channel selector dial or the remote control.
The sub band mode is canceled about 5 seconds later from the stop of operation.
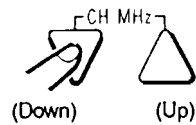
2. With band unit connected
[1] When the SUB button on the remote control, the bar sign under "MAIN" starts flickering.
On the radio unit, press the SUB/K.L button.
Without operation for about 3 seconds, the status prior to pressure of the SUB button is restored.

[2] Next, press the MAIN button of the band to be taken as the sub band.
Thus, the bar sign flickering disappears and the "MAIN" sign starts flickering. With this, the sub band setting is completed.
Thus the frequency can be varied up/down by the rotary channel selector dial or remote control.
The sub band mode is canceled about 5 seconds later from the stop of operation.

[Operation Method]

In the following...
1. "MAIN" is omitted in an illustration for the display section.
2. Unless otherwise specified, each operation should be performed on a main band.
3. The operation method is described with the center of the 430 MHz band.
4. Of the operation method, the procedure using the remote control is main.

1. Operation on call frequency

●When the CALL button is pressed, the call frequency is played on the display section. When it is pressed again, the frequency display prior to pressing the CALL button is restored.

●The CALL button is to call the call frequency with priority.

●The call frequency, which is set initially, cab be rewritten.

●The repeater mode can be set to the call frequency by writing.

Initial settings... 145.00 MHz for 144 MHz band
433.00 MHz for 430 MHz band
1,295 MHz for 1,200 MHz band
29.30 MHz for 28 MHz band

[Procedure]
[1] On the remote control, press the 430 button.
Otherwise, on the radio unit, press the MAIN button for the 430 MHz band.

[2] On the remote control, press the #CALL DIMM button.
On the radio unit, press the CALL/MUTE button.

"C 433.000" is displayed.
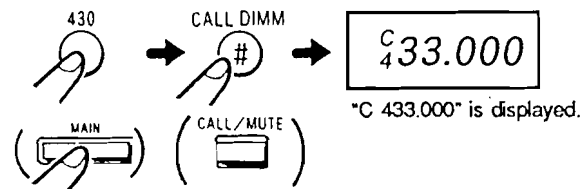
[3] Press the PTT button on the remote control for communications.

[Method of rewriting the call frequency]

[Procedure]

[1] On the remote control, press the #CALL DIMM button.
Otherwise, on the radio unit, press the CALL/MUTE button.
Thus, "C433.000" will be displayed.

CALL DIMM
→ C433.000
(CALL/MUTE)
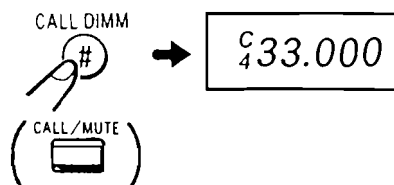
[2] On the remote control, press the D MW K.L button.
On the radio unit, press the MW button.
Thus, on the display section, "C" will change from lighting to flickering, indicating the write mode.
"C" flickers.

Flickers
MW K.L
D → C433.000
(MW)

[3] Set an arbitrary frequency by the CH MHz button on the remote control or the rotary channel selector dial on the radio unit. "C433.500" will be displayed.

CH MHz
Flickers
(Down) (Up) → C433.500
433.500 is to be set.

[4] Press the D MW K.L button on the remote control again, and a beep sound will be heard to indicate the completion of writing. On the radio unit, press the MW button. On the display section, "C" will change from flickering to lighting and 433.500 will be set as the call frequency.

Lights Beeps
MW K L
D → C433.500
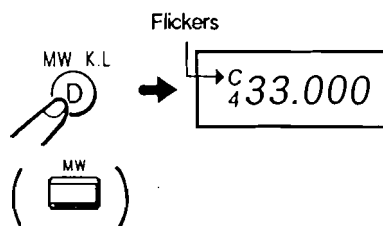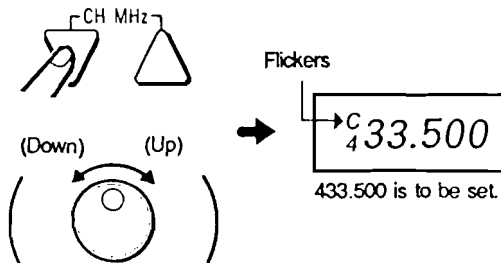(MW)
433.500 has been set.
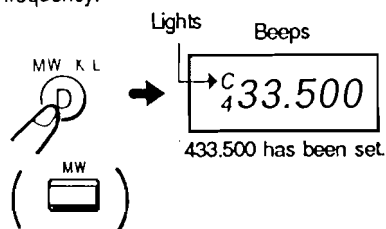
[5] Press the #CALL DIMM button on the remote control again, and the status prior to this pressing will be restored.

[Method of writing the repeater mode to the call frequency]

[Procedure]

[1] On the remote control, press the #CALL DIMM button, and "C433.000" will be displayed.

CALL DIMM
→ C433.000
(CALL/MUTE)

[2] On the remote control, while pressing the FUNC button, press the RPT (7) button to engage the repeater mode.
Otherwise, on the radio unit, press the RPT/SHIFT button.

Lights
RPT
FUNC + 7 → RPT
(RPT/SIFT)

[3] Press the #CALL DIMM button on the remote control again, the status prior to this pressure will be restored.

[Advice]
[] For + shift, when "RPT" is displayed on the display section, press the +9 button while pressing the FUNC button.
On the radio unit, after pressing the FUNC button, press the REV+ button.

RPT +
FUNC + 9 → C433.000
(FUNC → REV/+)
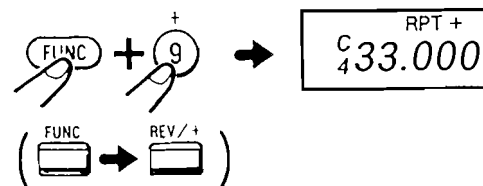
[] The repeater mode or tone squelch mode will be memorized irrespective of rewriting the call frequency.

[Note]
The REV (reverse) operation is not memorized.

[Method of writing the tone squelch mode to the call frequency]

Enabled only with CTN50 connected.

[Procedure]

[1] On the remote control, press the #CALL DIMM button, and "C433.000" will be displayed.
    Otherwise, on the radio unit, press the CALL/MUTE button.

CALL DIMM → $^C_4$*33.000*

(CALL/MUTE)

[2] On the remote control, while pressing the FUNC button, press the 3 T.SQL button to engage the tone squelch mode.
    Otherwise, on the radio unit, press the T.SQL/T/F button.

T.SQL
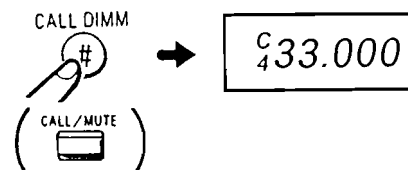(FUNC) + (3) → T.SQL $^C_4$*33.000*

(T.SQL/T F)

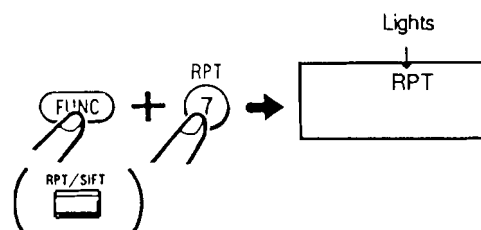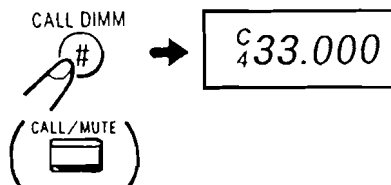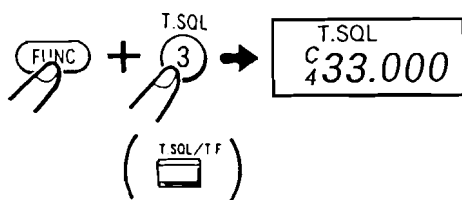[3] Press the #CALL DIMM button on the remote control again, and the status prior to this pressure will be restored.

2. Method of simultaneous operation on two waves by two persons

One unit of C50/C50D can be operated by two persons with an optional microphone CMP838G and the microphone of the remote control.

[Procedure]

For example where operation on 144 MHz band is made by the optional microphone and operation on 430 MHz band is made by the microphone of the remote control.

[1] Connect the optional microphone to the MIC terminal.

[2] Set the MIC SELECTOR switch to "1".
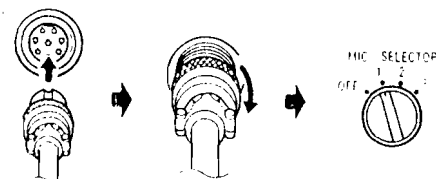
[3] Set the 430 MHz band as the main band.

[4] One person is able to operate on the 144 MHz band by the optional microphone, and the other person is able to operate on the 430 MHz band by the microphone of the remote control.

| 144 MHz band | 430 MHz band |

Can be operated at the same time
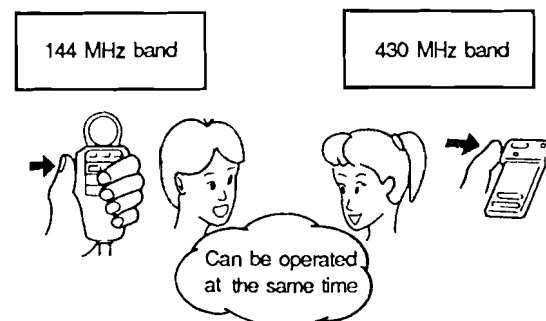
[Advice]

[] The microphone connected to the MIC terminal is capable of transmission on the band corresponding to the position of the MIC SELECTOR switch independent of the "MAIN" sign on the display section.

MIC SELECTOR position	Transmission by microphone connected to MIC terminal
OFF	Disabled
1	Transmission on 144 MHz band
2	Transmission on 430 MHz band
3	Transmission on band of band unit

[] With a band already engaging the packet mode, only one another band is available.

[Notes]

For simultaneous transmission on two waves in the C50D, the Hi power mode is unfeasible. For this purpose, the transmission output of each band should be set to Mid or Lo power.

3. Repeater operation method

[On repeater operation]
This refers to radio communications through repeater station.
The repeater operation is feasible in areas where repeater stations are established. For this, check technical journals for transmission/reception frequencies of repeater stations.

●Communications are performed through a repeater station on frequencies different between transmission and reception. Therefore, the radio needs a feature to shift transmission/reception frequencies. Furthermore, it also needs a built-in encoder to drive the repeater station.
The C50/C50D permits the repeater operation because of its built-in feature of 88.5 Hz (fixed) driving the repeater station without any addition.

●The repeater operation enables communications with remote station by a small-power transceiver by virtue of through repeater station.
In operation on Hi power, access is gained to a repeater station identical in frequency. Operation on Lo power is recommendable for C50 and C50D.
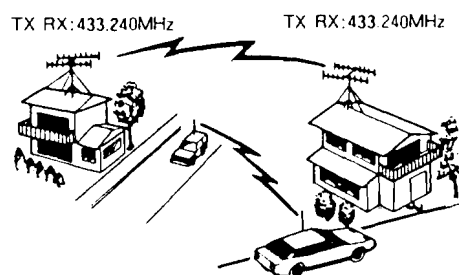
Ordinary Operation

TX RX:433.240MHz   TX RX:433.240MHz

Repeater Operation

Repeater station TX:439.520MHz
                  RX:434.520MHz

TX:434.520MHz   TX:434.520MHz
RX:439.520MHz   RX:439.520MHz
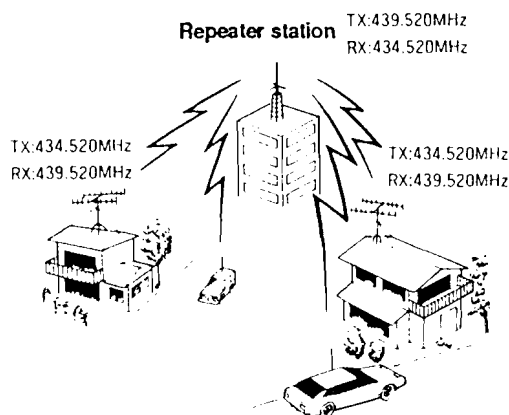
For the C50/C50D, every repeater operating frequency specified by JARL is set to the repeater mode, thereby neutralizing some drawback of shift frequency and repeater mode settings. Needless to say, the repeater mode can be canceled.

[Advices]
[] For repeater operation on memory frequency, even when   tone squelch mode is entered, the tone frequency set by   the RPT/SHIFT button is engaged.

[] For repeater operation on VFO frequency, when the tone squelch mode is entered, the tone frequency set by the   T.SQL/T.F button is engaged.

[Note]
Avoid simplex operation on a repeater operating frequency as a band plan.

[Repeater operation method]

Method using PMR

[Procedure]
[1] Set the 430 MHz band as the main band.

[2] On the remote control, press the "PMR MUTE button, and "PM", "439.5202 and "RPT" will be displayed (initial values).
    Otherwise, on the radio unit, press the PMR button.

Engage the 430 MHz band. → PMR MUTE (*) → M P4 39.520 RPT

PMR
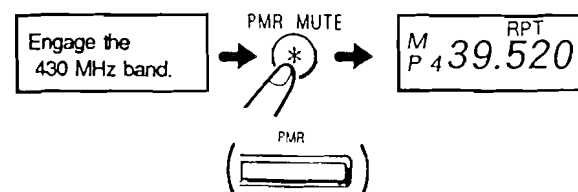
[3] Press the PTT button on the remote control for communications.

Method with frequency set

[Procedure]
[1] Press numeral keys on the remote control to the   frequency of the repeater station.
When the repeater frequency is set, the repeater mode is automatically entered. ("RPT" lights.)

Repeater mode is automatically entered.

PACKET
9 ···· (4) → RPT

Set to the frequency of the repeater station.
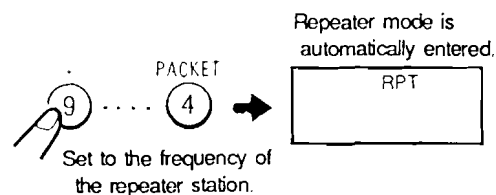
[2] Press the PTT button on the remote control for communications.

[Advices]
[] In repeater operation, on the remote control, when the 8 REV button is pressed while pressing the FUNC button, the reception frequency takes place.

Transmission on
439.520 MHz with
PTT ON
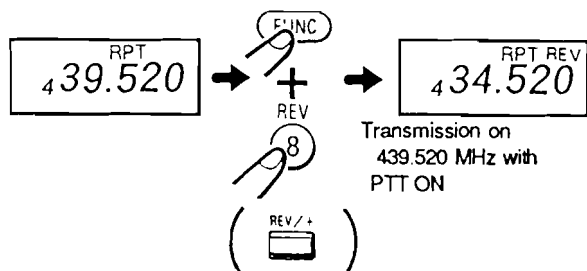
[] In repeater operation, on the remote control, when the +9 button is pressed while pressing the FUNC button, the shift direction is reversed. On the radio unit, after pressing the FUNC button, press the REV/+ button.

Off-band display

$$\left(\begin{array}{l} 439.520\ MHz\ + \\ 5\ MHz = Off\text{-}band \end{array} \right)$$
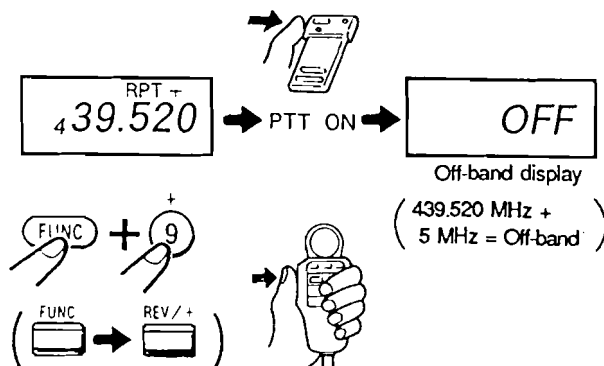
[Note]
When the shift frequency goes off the amateur band, "OFF" appears on the display section so that no transmission is made.

4. Method of altering the tone frequency in repeater operation

List of tone frequencies			(Unit: Hz)
67.0	100.0	141.3	203.5
71.9	103.5	146.2	210.7
74.4	107.2	151.4	218.1
77.0	110.9	156.7	225.7
79.7	114.8	162.2	233.6
82.5	118.8	167.9	241.8
85.4	123.0	173.8	250.3
88.5	127.3	179.9	
91.5	131.8	186.2	
94.8	136.5	192.8	

Only with CTN50 connected
*In the C50/C50D, a tone frequency of 88.5 MHz for repeater operation is memorized. With an optional tone squelch unit CTN50 connected, the tone frequency can be altered arbitrarily.

**[Procedure]**
[1] Set the 430 MHz band as the main band.

[2] On the radio unit, after pressing the FUNC button, press the RPT/SHIFT button. (Only on the radio unit)
Thus, the shift frequency will be displayed on the display section.

Shift frequency

For 430 MHz
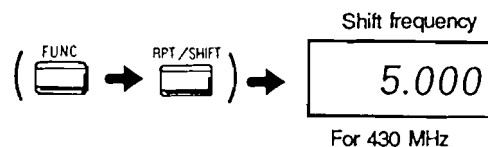
[3] Press the RPT/SHIFT button on the radio unit again, and the tone frequency will be displayed on the display section instead.
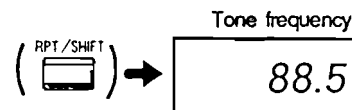
Tone frequency

[4] Set a new tone frequency by the rotary channel selector dial on the radio unit or the CH MHz button on the remote control. When initial setting 88.5 is reached, a single soft-pitched sound (B) is emitted to inform this reaching.
From 37 kinds of tone frequencies already memorized, one is selected.

Tone frequency setting
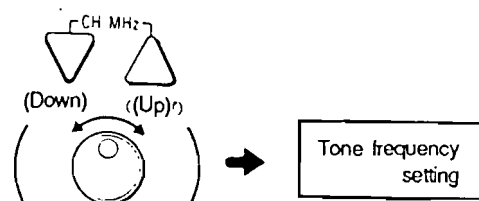
[5] When the RPT/SHIFT button is pressed on the radio unit, the prior frequency display is restored.

[6] The tone frequency is rewritten completely herewith.

[Advices]
[] It is not necessary to engage the repeater mode.
[] When the tone frequency has been altered, the repeater operation is performed on the newly assumed tone frequency.

5. Method of altering the shift frequency in repeater operation

·In the C50/C50D, a shift frequency of 5 MHz for repeater operation is memorized. This shift frequency can be altered arbitrarily.

The initial settings are as follows:
144 MHz band... 0.600 MHz   28 MHz band... 0.100 MHz
430 MHz band... 5.000 MHz   1,200 MHz band... 20.000 MHz

[Procedure]
[1] Set the 430 MHz band as the main band.

[2] On the radio unit, after pressing the FUNC button, press   the RPT/SHIFT button. (Only on the radio unit)
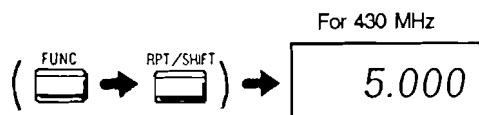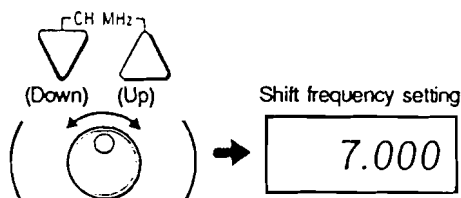Thus, the shift frequency will be displayed on the display section.

For 430 MHz

$$(FUNC \rightarrow RPT/SHIFT) \rightarrow \boxed{5.000}$$

[3] Set a new shift frequency by the rotary channel selector dial on the radio unit or by numeral key or the CH MHz button on the remote control.

CH MHz
(Down) (Up)   Shift frequency setting

$$\boxed{7.000}$$

[4] Press the RPT/SHIFT button on the radio unit again, and   the prior frequency display will be restored.

$$(RPT/SHIFT) \rightarrow \boxed{\text{The frequency prior to this altering is restored.}}$$
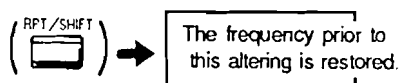
In this case, with an optional tone squelch unit CTN50 connected, the tone frequency display will thereby be restored. Therefore, it is needed to press the RPT/SHIFT   button again.

Tone frequency

$$(RPT/SHIFT) \rightarrow \boxed{88.5}$$
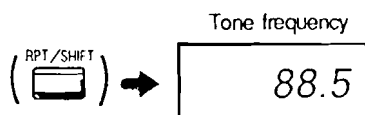
[5] The shift frequency is rewritten completely therewith.

[Advices]
[] It is not necessary to engage the repeater mode.
[] When the shift frequency has been altered, the repeater operation is performed on the newly assumed shift frequency.
[] The maximum permissible shift frequency is determined in its upper limit for each band.

6. Operation using the PMR feature capable of calling a very often used frequency by a single action

Great convenience will be obtained due to the use of the priority memory (PMR) feature which is capable of calling by a single action a simplex frequency or repeater station frequency frequently used in usual operation.

[Procedure]
[1] On the remote control, press the ·PMR MUTE button.
    Otherwise, on the radio unit, press the PMR button.
    Thus, ·PM· will appear on the display section to indicate the PMR call mode.

Lights

$$(PMR) \quad PMR \; MUTE \rightarrow \boxed{\begin{array}{c} M \\ P \end{array}}$$
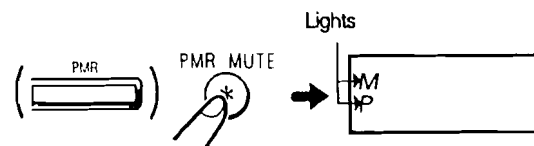
Initial values are as follows:
144 MHz... 145.000 MHz, simplex mode
430 MHz... 439.52 MHz, repeater mode
1,200 MHz... 1,292.06 MHz, repeater mode
28 MHz... 29.68 MHz, repeater mode

[Method of calling or rewriting the PMR frequency]

[Procedure]
[1] On the remote control, press the ·PMR button.
    Otherwise, on the radio unit, press the PMR button.

[2] On the remote control, press the D MW K.L button to   engage the memory rewrite mode.
    Otherwise, on the radio unit, press the MW button.
    Thus, ·M· will flicker on the display section to indicate the memory rewrite mode.
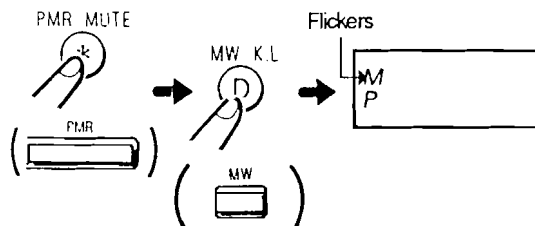
PMR MUTE   Flickers

$$(PMR) \quad MW \; K.L \quad (MW) \rightarrow \boxed{\begin{array}{c} M \\ P \end{array}}$$

[3] Set you desired frequency by the rotary channel selector   dial on the radio unit or by the CH MHz button on the remote control.

[Note]
A numeral key on the remote control cannot be input directly.

[4] On the remote control, press the D MW K.L button again, and "M" will change from flickering to lighting, and the new PMR frequency be displayed instead.
Otherwise, on the radio unit, press the MW button.

Flickers Frequency setting   Lighting Completion of setting

[Advice]
[] For setting or canceling the repeater mode, on the remote control, press the 7 RPT button while pressing the FUNC button when in the PMR call mode. The setting or cancellation can be made due to repeatedly performance of the same operation.
On the radio unit, press the RPT/SHIFT button.
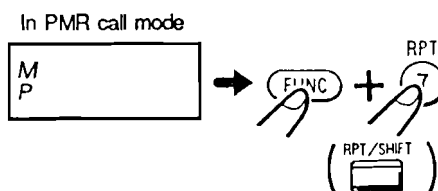
In PMR call mode

[Notes]
1. During PMR calling, with the clock mode selected, when the POWER switch is set OFF and then ON again, PMR is canceled. However, this means no abnormality.

2. During PMR, the LED of the MR button does not light.

7. Method of operation on memory frequency

Each band is provided with a memory capacity of 10 channels, thus eliminating bother of frequency setting.

Moreover, it is also possible to memorize such factors as repeater mode, shift frequency, tone frequency and tone squelch mode so that the application range is further widened.

Memory addresses in which frequencies are memorized are represented as M0, M1, M2,.....M9.

[Procedure]
[1] Press the B MR ATT button on the remote control, and "M" will light on the display section to indicate the memory frequency call mode.
Otherwise, on the radio unit, press the MR button.

MR ATT   Memory frequency call

Memory address number
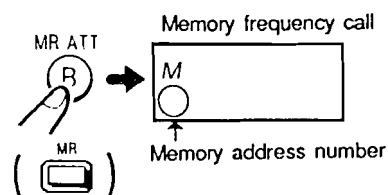
[2] Call your desired memory address number by the rotary channel selector dial on the radio unit or by a numeral key or CH MHz button on the remote control.

(Down)   (Up)

Memory address number

[3] Press the PTT button on the remote control to perform communications.

PTT ON
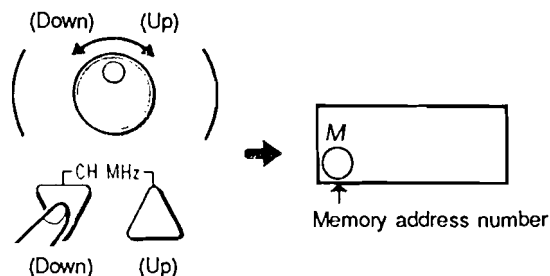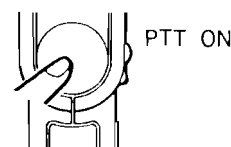
[4] After the termination of communications, press the A CLR PWR button or B MR ATT button on the remote control to cancel the memory call mode, and the VFO mode will be engaged.

Memory call mode   CLR PWR   Cancel
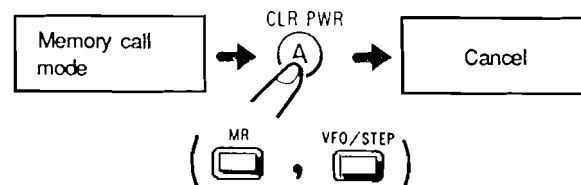
[Note]
When the A CLR PWR button on the remote control is pressed, the VFO frequency is displayed instead.
When the B MR ATT button on the remote control is pressed, the previous VFO frequency is restored.
Otherwise, on the radio unit, use the MR and VFO/STEP buttons.

[Procedure to memorize new frequency]

[Procedure]

[1] Display the frequency to be memorized on the display section.
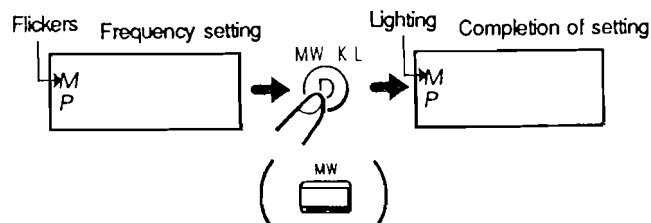
[2] On the remote control, press the B MR ATT button.
   Otherwise, on the radio unit, press the MR button.
   Thus, the memory address number (M0) is displayed flickering on the display section. (This lights when that frequency is already memorized.)
   This is the memory frequency call mode.

Frequency to be memorized   Flickers

Memory address number

[3] Set the memory address number by the rotary channel selector knob on the radio unit or by a numeral key or CH MHz button on the remote control.

[4] On the remote control, press the D MW K.L button, and   the display of the memory address number (Mx) lights to   indicate that the memory frequency is written completely.
   Otherwise, on the radio unit, press the MW button.

Address number setting   Lights

Memory address number
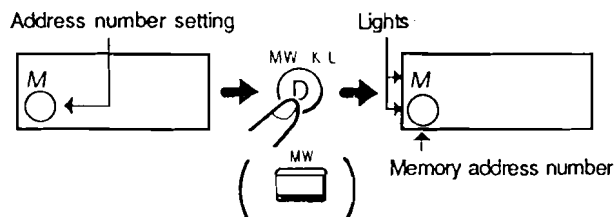
[Advice]
[] In the memory call mode, when the memory address is not occupied, "Mx" flickers and the VFO frequency is displayed.

[Method of altering a memory frequency written]

[Procedure]

[1] On the remote control, press the B MR ATT button.
   Otherwise, on the radio unit, press the MR button.

[2] Thus, the display of the memory address number (Mx) will light on the display section to indicate that the memory frequency call mode is engaged.
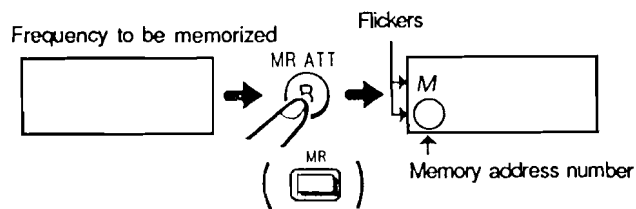
Lights

Memory address number
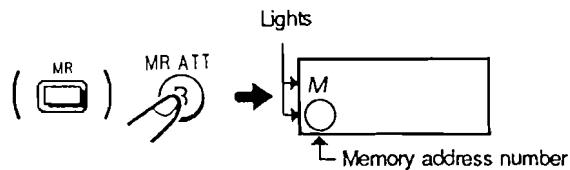
[3] On the remote control, press the MW K.L button, and only "M" for the memory address flickers.
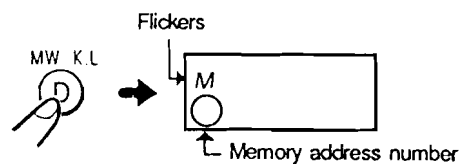
Flickers

Memory address number

[4] Set your desired frequency by the rotary channel selector dial on the radio unit or by the CH MHz button on the remote control.

Flickers   Frequency setting

(Down)   (Up)

Memory address number
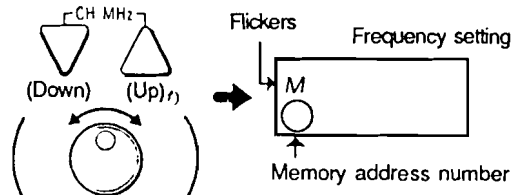
[5] On the remote control unit, press the MW K.L button, and "M" on the display section changes from flickering to lighting to indicate that rewriting is completed.

Lights   Completion of rewriting

Memory address number
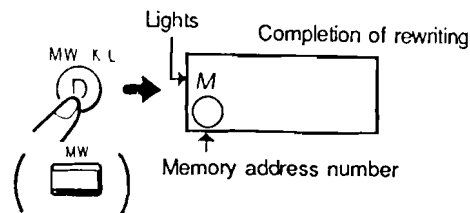
[6] On the remote control, press the A CLR PWR button or B   MR ATT button, and the VFO mode will be restored.

[Method of erasing a memory frequency written]

Method of erasure together with memory address

[Procedure]
[1] Set as the main band the band of which a memory frequency is to be erased.

[2] Holding pressing the MR button on the radio unit, display the memory address number to be erased by the rotary channel selector dial.

(Down)　(Up)　Lights　Number to be erased
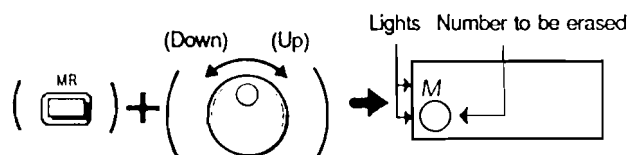
[3] On the radio unit, press the MR button or the VFO/STEP button, and on the display section the display of the memory address number flickers to inform that the memory frequency has been erased.

Flickers　Frequency to be erased
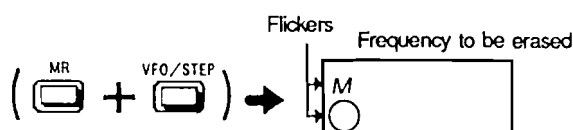
Method of erasing every memory address

[Procedure]
[1] Set as the main band the band of which memory address is to be erased.

[2] On the radio unit, while pressing the MR button (with the MR's LED OFF), press the MAIN button.
(The state that the MR's LED is OFF refers to when the memory call mode is canceled.)

Cancel
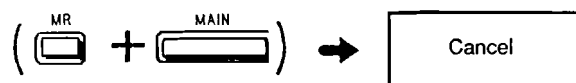
[3] A single long high-pitched beep sound is heard to indicate that the contents of every address are erased.

[Advice]
Erasure is also possible for a band other than main bands. At this time, while pressing the MR button (only when the band of which memory frequency is to be erased is in the VFO mode), press the MAIN button for the band of which memory frequency is to be erased.

[Note]
Note that the performance of this operation results in erasure of all contents of EEPROM.
(Memory address 0 to 9, code address 0 to 5 and P)

8. Method of writing repeater mode to memory frequency

The repeater mode can be set to a memory frequency by writing. In addition, a shift frequency can also be set.

[Advices]
1) To a memory frequency,it is possible to write the repeater mode, the repeater shift frequency and tone frequency. In addition, the repeater mode and the tone squelch mode can also be written.
　　To a memory frequency, only one tone frequency can be written. Namely, the tone frequency in the repeater mode and is identical with that in the tone squelch mode.

2) To a memory frequency, it is possible to write the tone squelch mode and the tone frequency.

[Method of writing repeater shift frequency to memory frequency]

[Note]
For mode writing or tone/shift frequency writing to a memory frequency, press the RPT/SHIFT button after pressing the FUNC button.

[Procedure]
[1] Call a memory frequency, and write the repeater mode thereto.

[2] After pressing the FUNC button, press the RPT/SHIFT button. You can set your desired shift frequency by CH MHz button,

numeral key and main band select button on the remote control.

[3] Press the RPT/SHIFT button twice, and the prior memory call mode is restored.

[Method of writing repeater tone frequency to memory frequency]

[Note]
For mode writing or shift/tone frequency writing, press the RPT/SHIFT button after pressing the FUNC button.

[Procedure]
[1] Call a memory frequency and write the repeater mode thereto.

[2] After pressing the FUNC button, press the RPT/SHIFT button. Thus, the shift frequency will be displayed. Then, repress the RPT/SHIFT button.

You can set your desired tone frequency by CH MHz and main band select buttons on the remote control.

[3] Press the RPT/SIFT button once, and the prior memory call mode is restored.

[Method of writing repeater mode]

[Procedure]
[1] Set the 430 MHz band as the main band.

[2] Call a memory frequency.

[3] On the remote control, while pressing the FUNC button, press the 7 RPT button.
  Otherwise, on the radio unit, press the RPT/SHIFT button.
  Thus, "RPT" will appear on the display section.

[4] On the remote control, press the D MW K.L button, and "M" for the memory address number will flicker.
Otherwise, on the radio unit, press the MW button.
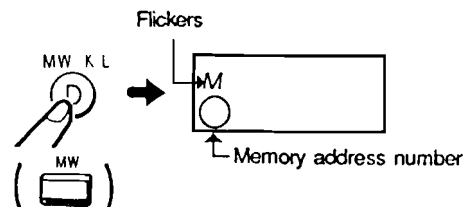
[5] On the remote control, press the D MW K.L button once again, and "M" for the memory address number changes from flickering to lighting to indicate that the repeater mode is written.
Otherwise, on the radio unit, repress the MW button.

[Method of canceling repeater mode]

[Procedure]
[1] Set the 430 MHz band as the main band.

[2] Call a memory frequency.

[3] On the remote control, while pressing the FUNC button, press the 7 RPT button.
Otherwise, on the radio unit, press the RPT/SHIFT button.
Thus, "RPT" disappears on the display section.
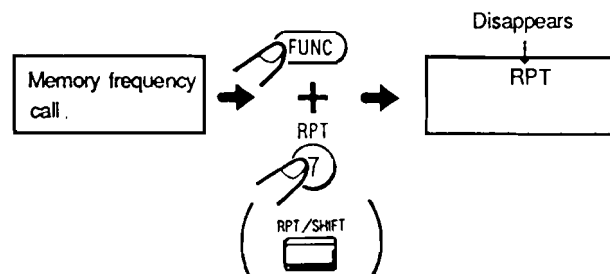
[4] On the remote control, press the D MW K.L button, and "M" for the memory address number will flicker.
  Otherwise, on the radio unit, press the MW button.
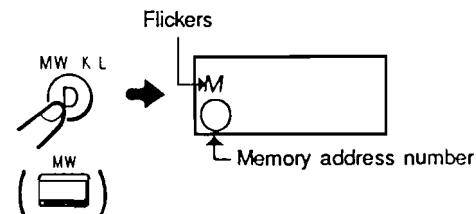
[5] On the remote control, press the D MW K.L button once again, and "M" for the memory address number will change from flickering to lighting to indicate that the repeater mode is canceled
  Otherwise, on the radio unit, repress the MW button.
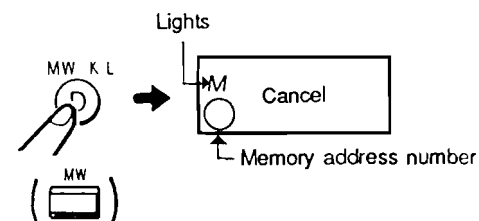
9. Method of writing tone squelch mode to memory frequency

The use of an optional tone squelch unit CTN50 is necessary.
The tone squelch mode can be written to a memory frequency. In addition, a tone frequency can also be written.

[Method of writing tone squelch tone frequency to memory frequency]

[Procedure]
[1] Call a memory frequency, and write the tone squelch mode thereto.

[2] After pressing the FUNC button, press the RPT/SHIFT button. Thus, the shift frequency will be displayed. Then, repress the RPT/SHIFT button.

You can set your desired tone frequency by CH MHz and main band select buttons on the remote control.

[3] Press the RPT/SHIFT button once, and the prior memory call mode will be restored.

[Method of writing tone squelch mode]
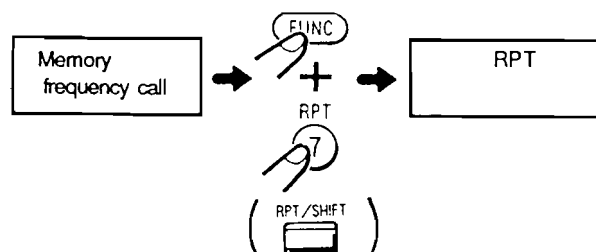
[Procedure]
[1] Set the main band.

[2] Call a memory frequency.

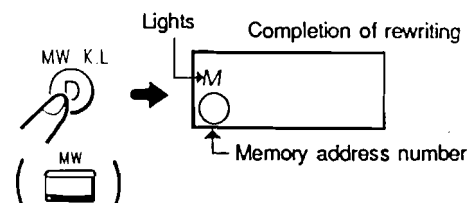[3] On the remote control, while pressing the FUNC button, press the 3 T.SQL button, and "T.SQL" will appear on the display section.
Otherwise, on the radio unit, press the T.SQL/T.F button.
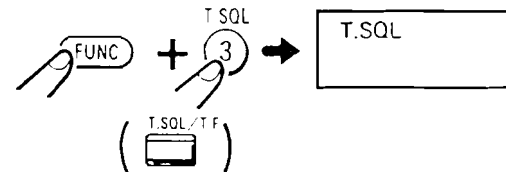
[4] On the remote control, press the D MW K.L button, and "M" for the memory address number will flicker.
Otherwise, on the radio unit, press the MW button.
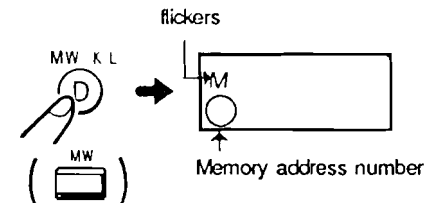
[5] On the remote control, press the D MW K,L button once again, and "M" for the memory address number will change from flickering to lighting to indicate that the tone squelch mode is written.
Otherwise, on the radio unit, repress the MW button.
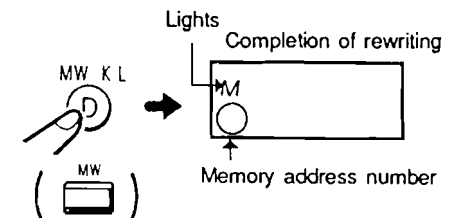
[Method of cancelling tone squelch mode]

**[Procedure]**
[1] Set the main band.

[2] Call a memory frequency.

[3] On the remote control, while pressing the FUNC button, press the 3 T.SQL button, and "T.SQL" disappears on the display section. Otherwise, on the radio unit, press the T.SQL/T.F button.
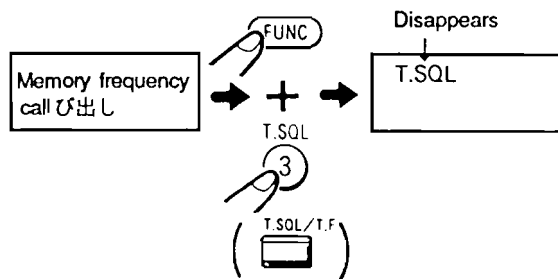
[4] On the remote control, press the D MW K.L button, and "M" for the memory address number will flickers. Otherwise, on the radio unit, press the MW button.
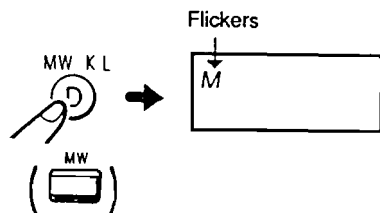
[5] On the remote control, press the D MW K.L button once again, and "M" for the memory address number will change from flickering to lighting to indicate that the tone squelch mode is canceled. Otherwise, on the radio unit, repress the MW button.
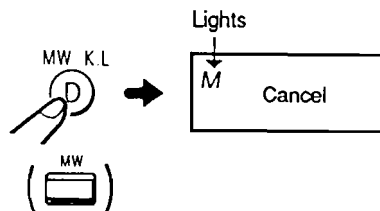
10. Tone squelch operation method

Connect an optional tone squelch unit CTN50. Without the CTN50 connected, the tone squelch button (T.SQL) operation is disabled.

[Procedure]
[1] Set as the main band the band of which tone squelch operation is performed.

[2] On the remote control, while pressing the FUNC button, press the 3 T.SQL button.
Otherwise, on the radio unit, press the T.SQL/T.F button.
Thus, on the display section, "T.SQL" will be displayed to indicate that the tone squelch operation mode is engaged.
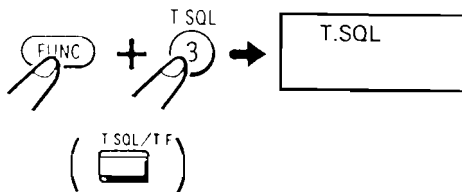
[3] On the remote control, press the PTT button to make communications. Initially, the tone frequency is set at 88.5 Hz.

[Advice]
[] In the tone squelch operation under this situation, the noise squelch also works. For this purpose, correctly adjust the SQL knob.

[Note]
Without agreement in tone frequency, no reception sound is heard from speaker. Make an agreement in tone frequency between transmission and reception sides.

[Method of setting tone frequency]

[Procedure]

[1] Set as the main band the band of which the tone frequency is to be altered.

[2] On the radio unit, after pressing the FUNC button, press the T.SQL/T.F button, and the tone frequency will be displayed on the display section.

Tone frequency

T.SQL 88.5
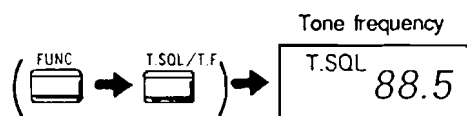
[3] Set your desired tone frequency by the rotary channel selector dial on the radio unit or by a CH MHz button on the remote control. (The initial setting is at 88.5 Hz.)

(Down) (Up)

CH MHz

Tone frequency setting
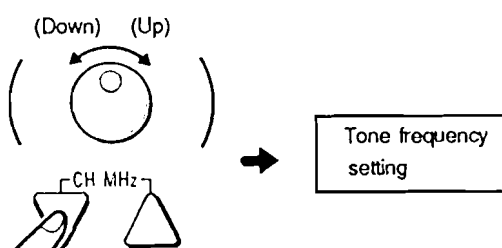
[4] On the radio unit, press the T.SQL/T.F button once again. Herewith, setting is completed. 37 kinds of tone frequencies are available.

(T.SQL/T.F)
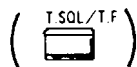
[Note]
The tone frequency cannot be called from the remote control.

[Advice]
In tone frequency setting, when 88.5 MHz is returned to, a single soft high-pitched sound (B) is emitted to inform the initial setting.

11. Packet operation method

This product is provided with the packet exclusive mode, which is highly convenient because of selection between packet operation and usual operation.

[Packet operation method]

[Procedure]

[1] Set as the main band the band on which packet communications are performed. (Normally, 430 MHz or 1,200 MHz band)

[2] Determine the operating frequency.

[3] On the remote control, while pressing the FUNC button, press the 4 PACKET button, and "PAC" will appears in place of the frequency display to indicate that the packet mode is engaged. Thereby, the set band is exclusive for packet mode.

Operating frequency setting

FUNC

PACKET 4

Packet mode

P A C
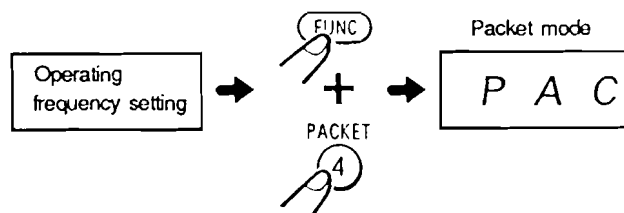
[4] Operate the terminal for packet communications.

[5] To cancel the packet mode, press the 4 PACKET button while pressing the FUNC button once again, and the frequency display appears in place of "PAC" to indicate that the packet mode is canceled.

PACKET

FUNC + 4
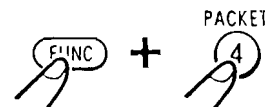
[Notes]
1. During the packet mode, a frequency cannot be altered.
2. For packet operation, you must be licensed for wave type F2. For the method of application for this license, refer to "How to fill the application form".
3. The use of an optional microphone cannot be made on the band on which communications are performed in packet mode.

[Advices]
[] When the packet mode is canceled, the packet communication terminal turns OFF to cut off the signal exchange between TNC and the radio unit.
[] With this unit in the VU meter mode, you can check the packet modulation by meter reading.

Note for packet operation:
When data is sent out at the same time that the radio unit enters the transmission mode, the first portion of the data signal is not be transmitted or received so that communications cannot be made.
Against this drawback, available is the feature that the transmission delay time (TX delay) can be set in the TNC side. Therefore, read the TNC's instruction manual to set the transmission delay time longer.

The TNC is an abbreviation for Terminal Node Controller, which is also called a packet controller.

[Prearrangements must be made for packet communications.]

Method of connection between radio unit and TNC:
Connect the ACC1 terminal on the rear to the TNC.
Using an accessory DIN connector, perform wiring according to the TNC.

Radio unit squelch setting:
Rotate the squelch knob on the radio unit clockwise and set it at a point at where noise disappears.

On ACC1 terminal:

Pin No.	Pin name
1	Accessory pin (DTMF OUT (144 MHz band))
2	Accessory pin (DTMF OUT(28 MHz or 1,200 MHz band))
3	Squelch (for packet operation)
4	Accessory pin (DTMF OUT (430 MHz band))
5	Audio output (for packet operation)
6	PTT (for packet operation)
7	Audio input (for packet operation)
8	SW +8 V (in response with POWER switch)

●Method of wiring accessory DIN plug
Use shielded wires for the wire material used for audio signal input/output.
(1) As shown, uncover the plug and separate it into meta cases (A) and (B).
(2) Solder ground lines to the insides of metal cases (A) and (B).

e. Forcing up (a), pull out (b).

Perform soldering within

Audio input
Shielded wire
Audio output
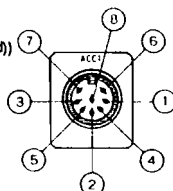
[Notes]
1. Unless the packet mode is engaged, the packet data cannot be input or output through the ACC1 terminal.
2. Pins 1, 2, 4 and 8 are not used with TNC.
3. When using the TNC built in the speaker, set the speaker switch of the TNC to OFF.
4. A voltage appears at pin 8. Be adequately careful not to short it.

Audio input/output adjustment:
Detach the rubber cover from the right side of the radio unit. After adjustment, attach the rubber cover to the radio unit.

(1) Input level adjustment (transmission modulation degree)
Adjust the C50/C50D packet input level or TNC output level so that the VU meter reads around "9" when data signal is transmitted with the radio unit set to the VU mode.

Lateral side of radio unit

Front side
Adjustment semi-fixed VR
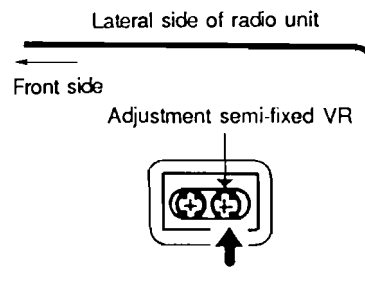
(2) OUtput level adjustment
Suitable to the TNC, adjust the packet communication audio output level of the radio unit, though already set to about 150 mV. For more information, refer to the TNC's instruction manual.

無線機部　側面

前面側
調整用半固定抵抗

12. Transmission output selection

*Selection is possible between three steps for the transmission output.

[Procedure]

[1] On the remote control, while pressing the FUNC button, press the A CLR PWR button.
Each time the A CLR PWR button is pressed, "M" or "L" appears on the display section, in which state the transmission output level is varied in three steps.
Otherwise, on the radio unit, press the RF PWR button.

CLR PWR

$$\text{FUNC} + \text{A} \rightarrow \boxed{M}$$

$$\left(\boxed{\text{RF PWR}}\right)$$

Press again. $\rightarrow \boxed{L}$
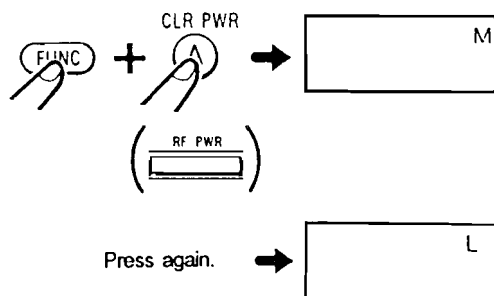
Display	Band	Transmission output	
		C 50	C 50 D
None (Hi)	144MHz	10W	50W
	430MHz	10W	40W
M	144/430MHz	5 W	10W
L	144/430MHz	1 W	5 W

[Notes]
1. Of the 1,200 MHz band unit, the Hi power is 10 watts.
2. With the 28 MHz band unit (50 watts) connected to the C50, transmission on the power is unfeasible.

13. Scan function

Two scans are available, pause scan and busy scan.
As regards the method of selection, press the MS/SCAN button after pressing the FUNC button on the radio unit itself during scan.
When a single short high-pitched sound (A) is heard, this indicates that busy scan is made, while when a single soft high-pitched sound (B) is heard, this means that pause scan is made.
When performing scan, adjust the squelch knob on the radio unit so that noise is not heard.
During scan, when transmission is made by pressing the PTT button, scan is stopped.

(1) 1 MHz width scan

[Procedure]

[1] Set as the main band the band to which scan is to be made.

[2] On the remote control, while pressing the FUNC button, press the C MS PS button.
Otherwise, on the radio unit, after pressing the FUNC button, press the MS/SCAN button.
Thus, scan will be performed to the 1 MHz width of band displayed.
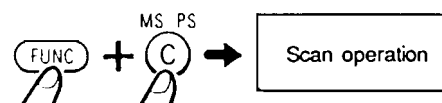
MS PS

$$\text{FUNC} + \text{C} \rightarrow \boxed{\text{Scan operation}}$$

[3] When canceling scan, press the A CLR PWR button on the remote control.
Otherwise, on the radio unit, press the VFO/STEP button or MS/SCAN button.

$$\left(\boxed{\text{VFO/STEP}}\right) \text{ Or } \left(\boxed{\text{MS/SCAN}}\right) \rightarrow \boxed{\text{Cancel}}$$

44
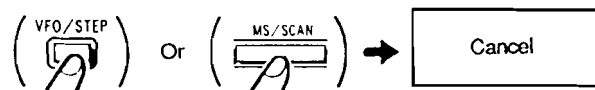
(2) Memory frequency scan

[Procedure]

[1] Set as the main band the band to which scan is to be made.

[2] On the remote control, press the C MS PS button, and scan will be made to the memory frequencies in order.
Otherwise, on the radio unit, press the MS/SCAN button.
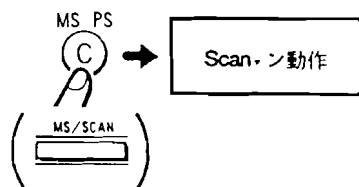
[3] When canceling scan, press the A CLR PWR button on the remote control.
Otherwise, on the radio unit, press the VFO/STEP button or MS/SCAN button.
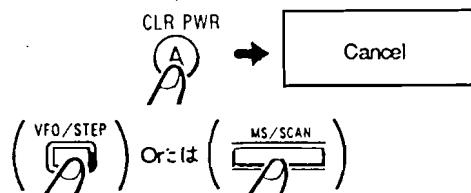
[Advices]
[] During scan to memory frequencies, when the C MS PS button on the remote control or the MS/SCAN button on the radio unit is pressed, this memory scan operation stops in the memory call mode.

[] Irrespective of the memory address number display, scan is performed from M0. However, any no-memory address is skipped over.

(3) All band scan

During the 1 MHz width scan, when the MHz/100K button is pressed after pressing the FUNC button on the radio unit, scan is performed to all the band.
Once again, when the MHz/100K button is pressed after pressing the FUNC button on the radio unit, the 1 MHz width scan is restored.
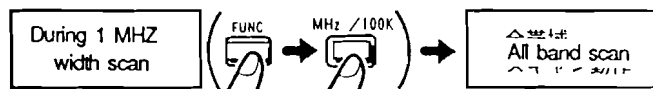
(4) Scan between arbitrary frequencies (PS: Program scan)

Making use of memory frequencies, scan can be made between arbitrary frequencies.
Concretely, here is performed a program scan that the address numbers of the start and end frequencies are designated to scan between these arbitrary frequencies.

[Procedure]
Example:
[1] First, memorize the start frequency (433.02 MHz) at memory address number 8.

[2] Then, memorize the end frequency (434.80 MHz) at memory address number 9.

Start frequency   End frequency
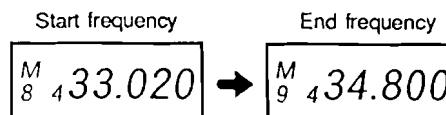
[3] Press the B MR ATT button on the remote control or the MR button on the radio unit to engage the memory call mode. Thus, on the display section, "M" and a memory address number will be displayed.

Address number display
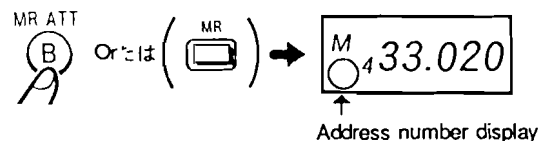
[4] Display the address number of the start address on the display section.
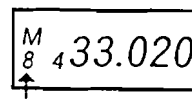

Address number of start frequency

[5] On the remote control, while pressing the FUNC button, press the MS PS button, and the memory address number will disappear on the display section.

Disappears
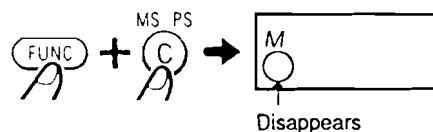
[6] Enter the address number of the end frequency from the remote control.

Thus, here will be performed a program scan that scan starts at 433.02 MHz and returns at 434.80 MHz.
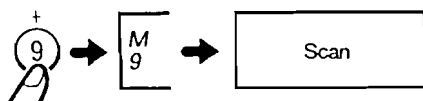
[Advices]

[] For program scan, designate the address numbers of the start and end frequencies each time.

[] Unless those frequencies are memorized, program scan is unfeasible.

[] When the start and end frequencies are identical with each other, all band scan operation is performed.

[] When an address number at which no end frequency is memorized is designated, a heavy beep sound (F) is heard to inform invalidity. In this way, if an address number at which no end frequency is memorized is designated once again, the (invalid) MR status is restored.

To counter this, confirm that the end frequency is memorized.

(5) Scan direction change

During scan, the scan direction can be changed by the rotary channel selector dial on the radio unit or by the CH MHz buttons on the remote control.

When a CH MHz button is pressed, scan stops temporarily. In this case, to resume scan, press a CH MHz button once again, and scan will be resumed in the direction corresponding to the button pressed.

Otherwise, when the rotary channel selector dial on the radio unit is rotated, the scan direction changes corresponding to the direction of rotation.

The scan direction can also be changed by the UP/DOWN button of an optional microphone CMP838G.

(6) Tone squelch mode scan

Unless tone squelch unit CTN50 is connected, the tone squelch scan is impossible.

[Procedure]

[1] Set as the main band the band to which scan is to be made.

[2] On the radio unit, press the T.SQL/T.F button to engage the tone squelch operation mode. (Also possible during scan)

Tone squelch operation
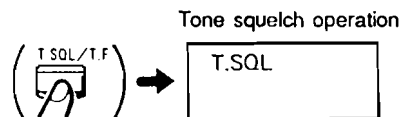
3] Perform scan. (Any of memory frequency scan, 1 MHz width scan and all band scan is permitted.) Without agreement in the set tone frequency, scan does not stop. In addition, because of the relationship with the tone squelch open time, the scan time is set to longer than normal.

[Note]

The 1 MHz scan and all band scan, the pause scan and busy scan and the up scan and down scan can be set independently to each of 144 MHz and 430 MHz bands, and their setting undergoes backup.

14. Convenient use of VU meter

Of this product, the meter functions in three modes: the S-meter for reception, the RF meter for transmission, and the VU meter for reception and transmission.

In the VU meter mode for reception, reading is made according to the reception sound. For transmission, reading is made according to the voice (modulated) from the microphone. Accordingly, you can know the modulation degree in packet communications or that of voice from the microphone. For the 3.5 kHz modulation (standard), the meter reads about "9".

[Procedure]
[1] On the remote control, while pressing the FUNC button, press the VU button, and "VU" will appear on the display section to indicate that the VU meter mode is engaged.
Otherwise, on the radio unit, press the VU/ATT button.

[2] At each button pressure, "S" and "VU" appear in an alternate manner.
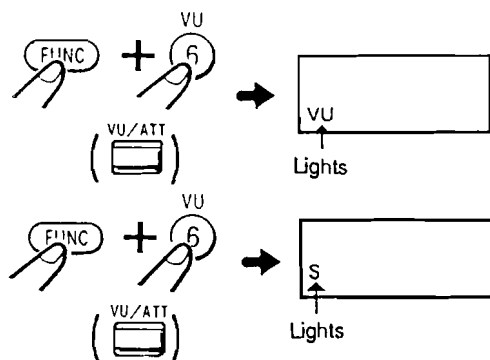
[Notes]
1. For reception, when the squelch is open with no signal, the VU meter runs. However, this does not mean any failure.
2. In the VU meter mode, it is recommended that the squelch be closed (by which no noise occurs in the no-signal state) for use.

15. Usage of reception sensitivity attenuator

This attenuator functions to attenuate the reception sensitivity of the receiver about 10 dB.

[Procedure]
[1] On the remote control, while pressing the FUNC button, press the B MR ATT button, and "ATT" will light on the display section.
Otherwise, on the radio unit, after pressing the FUNC button, press the VU/ATT button.
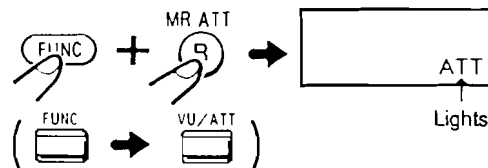
[2] Once again, while pressing the FUNC button, press the B MR ATT button to cancel.
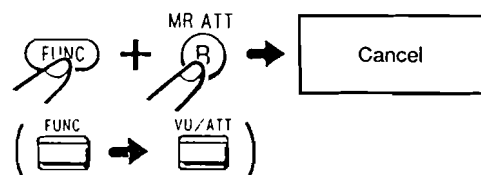
16. Mute operation to lower volume of reception sound

For the standard equipment (double band mode) or with a band unit connected (triple band mode), this function reduces the volume of unfavorable sound of another band by a predetermined amount, which is about 15 dB... (radio unit)

[Procedure]
[1] Set as the main band the band to which mute is to be applied.

[2] On the remote control, while pressing the FUNC button, press the *PMR MUTE button, and "MUTE" appears on the display section.
Otherwise, on the radio unit, after pressing the FUNC button, press the CALL/MUTE button.

Lights

PMR MUTE

FUNC + * → | MUTE |
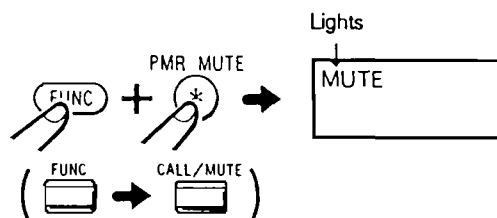
(FUNC → CALL/MUTE)

[3] Once again, while pressing the FUNC button, press the *PMR MUTE button to cancel.
Otherwise, on the radio unit, to cancel, after pressing the FUNC button, press the CALL/MUTE button.

PMR MUTE

FUNC + * → | Cancel |

(FUNC → CALL/MUTE)
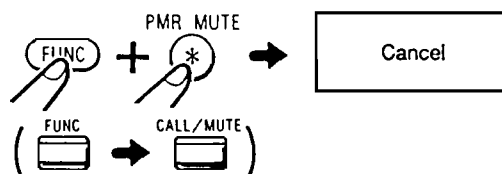
[Note]
During the mute operation, the reception sound monitored from the remote control is also muted (only for the band to which mute is applied).

| MUTE |

音が出なく
なります.

17. Illumination change of display section

This product is provided with a dimmer function to vary the illumination level of the fluorescent display tube in three steps. For use in a dark room, etc., the dimmer function is operated for easier view of the display section.

[Procedure]
[1] On the remote control, while pressing the FUNC button, press the #CALL DIMM button.
Otherwise, on the radio unit, after pressing the FUNC button, press the T/DIMM button.

[2] At each button pressure, the illumination lowers. At some point, conversely, it returns up to the original level.

CALL DIMM

FUNC + # → | Bright |

(FUNC → T/DIMM)

CALL DIMM

FUNC + # → | Half bright |

(FUNC → T/DIMM)

CALL DIMM

FUNC + # → | Dark |

(FUNC → T/DIMM)

18. Key lock function to disable button operation

A key lock function, which can be set for each individual band, is operated to prevent faulty operation.

[Procedure]

[1] Set as the main band the band to which key lock is to be applied.

[2] On the remote control, while pressing the FUNC button, press the D MW K.L button, and "K.L" will appear on the display section to indicate that keys are locked for that band.
Otherwise, on the radio unit, after pressing the FUNC button, press the SUB/K.L button.
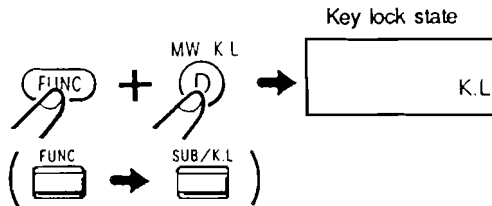
Key lock state

[Advice]
[] Even during key lock state, effective are the VOL, SQL OFF, MAIN band selection, PTT, POWER, FUNC and K.L buttons.

19. Clock function

This product is provided with three of clock display, ON timer and OFF timer functions. (The clock display is of 24-hour mode.)
Time setting is possible in units of hour as well. In this case, reverse the minute and hour setting procedures with each other.

[Time setting method]

[For standard equipment]
It is only by the remote control side that the time setting mode is obtained.

[Procedure]

[1] On the remote control, while pressing the FUNC button, press the 28/1.2G button, and the dot marks for time display will changes from flickering to lighting to indicate that the time setting mode is engaged.
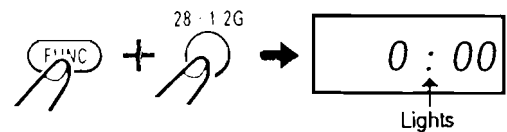
[2] On the radio unit, perform the minute setting by handling the rotary channel selector dial.
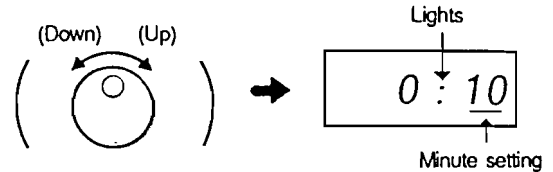
[3] Then, on the radio unit, after pressing the FUNC button, perform the hour setting by handling the rotary channel selector dial.
For the clock function, the FUNC button on the radio unit serves to select between hour and minute settings.
When no operation is performed 3 seconds after the selection of the hour setting, the minute setting is automatically resumed with a single soft high-pitched sound (B).
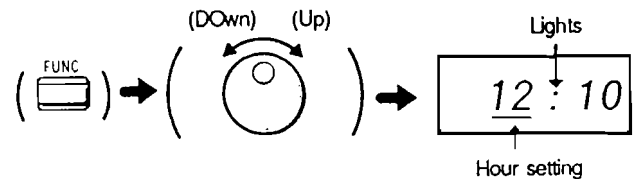
[4] After the termination of the time setting, press the MAIN SET button on the radio unit.
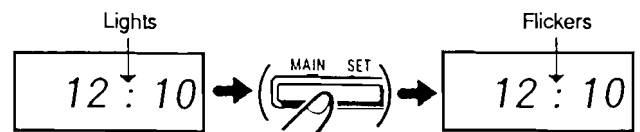
Thus, a beep sound will be heard, and the dot marks change to flickering, indicating that the time setting is completed.

[Advice]
[] When the MAIN SET button on the radio unit is pressed, the setting starts at "0" sec.

[With band unit connected]

[Procedure]

[1] Set the 28 MHz or 1,200 MHz band as the main band.

[2] On the remote control, while pressing the FUNC button, press the 0 TIME button.
Otherwise, on the radio unit, press the T/DIMM button.
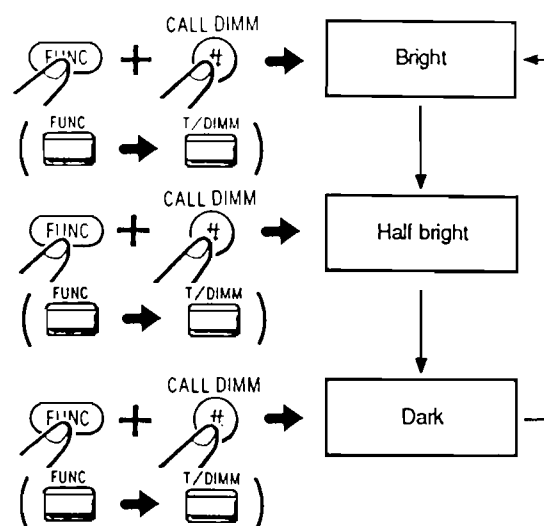Thus, the time display will supersede the frequency display.

TIME

Time display

$10 : 00$
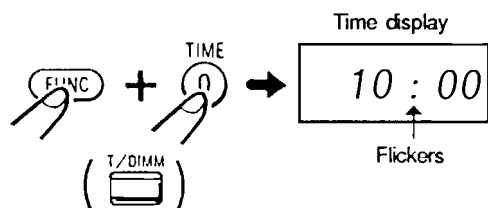
Flickers

[3] On the remote control, while pressing the FUNC button, press the 28/1.2G button.
Otherwise, on the radio unit, after pressing the FUNC button, press the MAIN SET button.
Thus, the dot marks will change to lighting from flickering, indicating that the time setting mode is engaged.

28/1.2G

FUNC

MAIN SET

Lights

$10 : 00$
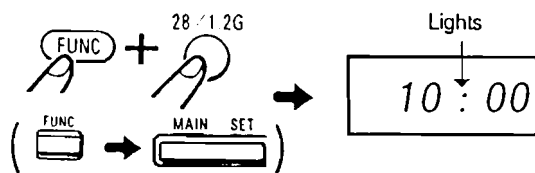
[4] On the remote control, perform the minute setting by handling the rotary channel selector dial on the radio unit or a CH MHz button on the remote control.

CH MHz
(Down)   (Up)

Lights

$0 : 10$

Minute setting
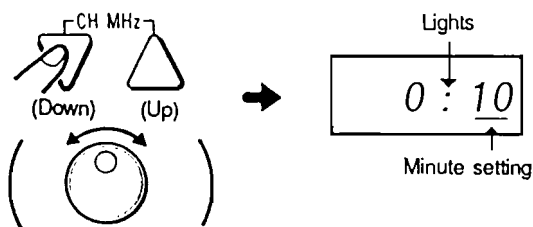
[5] Then, on the remote control, while pressing the FUNC button, press a CH MHz button for hour setting.
Otherwise, on the radio unit, for this purpose, handle the rotary channel selector dial after pressing the FUNC button.

CH MHz
(Down)   (Up)

FUNC

Lights

$12 : 10$

Hour setting
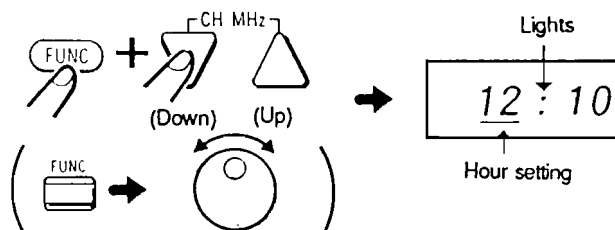
[6] After the termination of the time setting, on the remote control, while pressing the FUNC button, press the 28/1.2G button. Or, on the radio unit, press the MAIN SET button.
Thus, a beep sound will be heard and the dot marks change to flickering from lighting, indicating that the time setting is completed.

Lights

$12 : 10$

28/1.2G

MAIN SET

Flickers

$12 : 10$
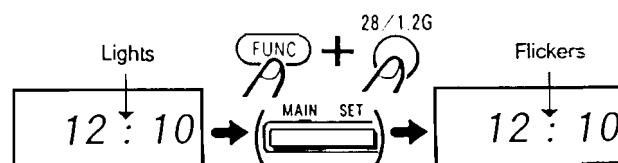
[7] On the remote control, while pressing the FUNC button, press the 0 TIME button.
Otherwise, on the radio unit, press the T/DIMM button.
Thus, the frequency display will supersede the time display so that the status prior to setting is restored.

TIME

周波数表示

T/DIMM
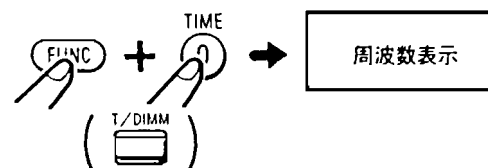
20. Function to automatically turn ON the power

This product is provided with the ON timer function to automatically turn ON the power at the set time.
When the ON timer mode is engaged with the power ON time displayed on the display section, this is very useful for schedule QSO.

[Note]
Avoid setting the ON timer and OFF timer times identical, as this produces no profit.

[Setting method for standard equipment]

When setting the ON timer time at 9:30 pm for power ON

[Procedure]
[1] On the radio unit, after pressing the FUNC button, press the RF PWR ON.T button corresponding to the band of which the time display is made.
Thus, on the display section, "on 0:00" will appear (initial value).

Lights
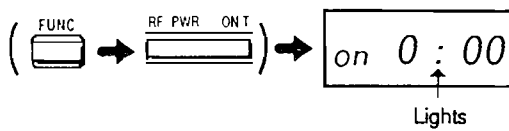
[2] On the radio unit, handle the rotary channel selector dial for minute setting at "30".
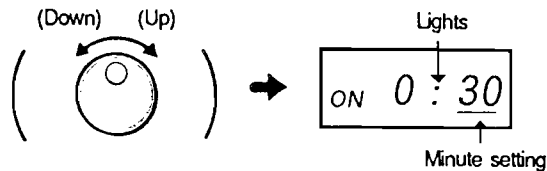
(Down) (Up)   Lights

Minute setting

[3] On the radio unit, after pressing the FUNC button, handle the rotary channel selector dial for hour setting at "21".

(Down) (Up)   Lights

Hour setting
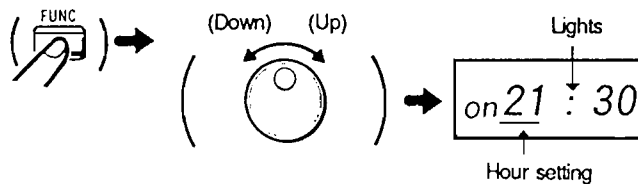
[4] On the radio unit, press the MAIN SET button, and on the display section, the dot marks will light to inform that the ON timer operation is validated.
When the MAIN SET button on the radio unit is pressed again, the dot marks disappear, indicating that the ON timer operation is invalid.

ON timer operation valid

Lights
ON timer operation invalid

Disappears
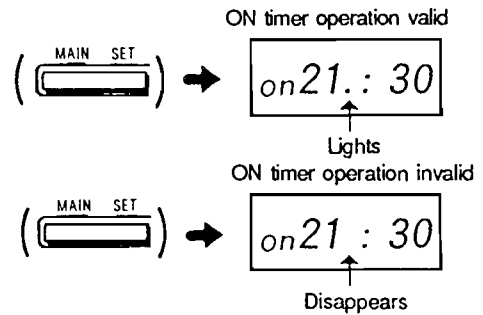
[5] On the radio unit, press the RF PWR ON.T button.
Thereby, the ON timer time will be set. The display returns to the normal time display.

[6] After the setting of the ON timer time, set the POWER switch on the radio unit to OFF.
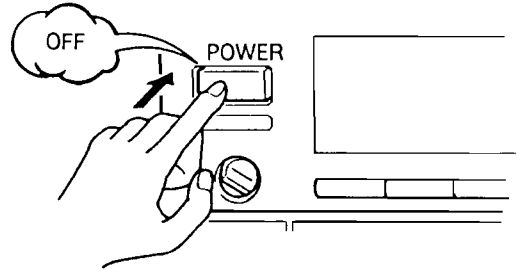
[7] When 9:30 pm is reached, the radio unit automatically turns ON the power.

[Advice]
On the way of setting, to cancel the ON timer function, press the T/DIMM button on the radio unit, and the display will return to the normal time display.

## [Setting method with band unit connected]

[Procedure]

[1] Set the 28 MHz or 1,200 MHz band as the main band.

[2] On the radio unit, while pressing the FUNC button, press the RF PWR ON.T button.
Thus, "on 0:00" (initial value) will be displayed.

Lights
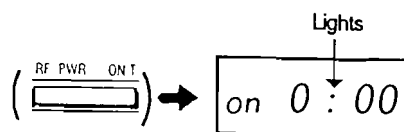
[3] Perform the minutes setting at "30" by handling a CH MHz button on the remote control or the rotary channel selector dial on the radio unit.

(Down) (Up)ｱ)

Lights

Minute setting
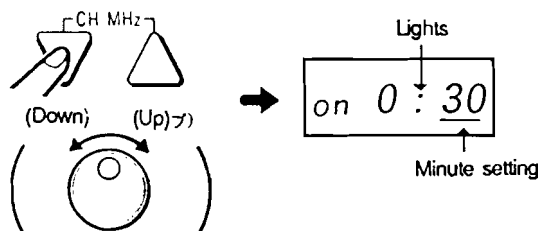
[4] Then, on the remote control, while pressing the FUNC button, press a CH MHz button for hour setting at "21".
Otherwise, on the radio unit, for this purpose, handle the rotary channel selector dial after pressing the FUNC button.
Herewith, the time setting is completed.

(Down) (Up)ｱ)

Lights

Hour setting
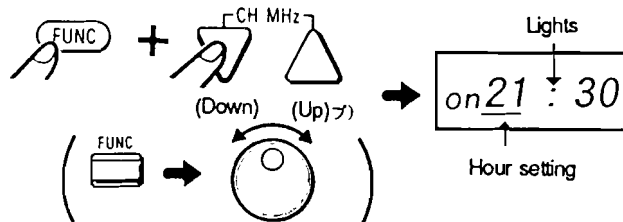
[Note]
Even when the time setting is completed, the ON timer operation cannot be obtained. Be sure to set the ON timer operation in addition.

[5] When the MAIN SET button on the radio unit is pressed, the ON timer operation is validated.
Upon completion of the time setting, a dot mark lights at the right lower edge of the hour's figure on the display.
When the same MAIN SET button is pressed again, the dot mark disappears, indicating that the ON timer operation is invalid.

ON timer operation valid

Lights
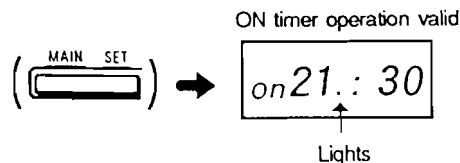
[6] On the radio unit, press the RF PWR ON.T button.
Thereby, the ON timer time will be set. The frequency display will be then restored.

[7] After the setting of the ON timer time, set the POWER switch on the radio unit to OFF.

[8] When 9:30 pm is reached, the radio unit automatically turns ON the power.

OFF POWER
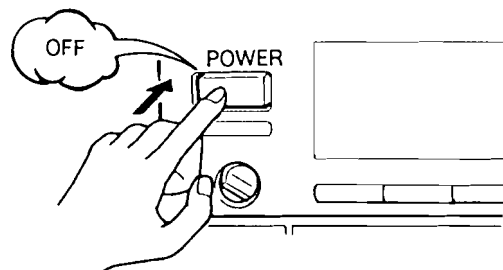
21. Function to automatically turn OFF the power

This product is provided with the OFF timer function to automatically turn OFF the power at the set time.

[Note]
Avoid setting the ON timer and OFF timer times identical, as this produces no profit.

[Setting method for standard equipment]

When setting the OFF timer time at 10:30 pm for power OFF

[Procedure]
[1] On the radio unit, press the PMR OFF.T button.
Thus, "OF 0:00" (initial value) will be displayed.

Lights

OF 0 : 00
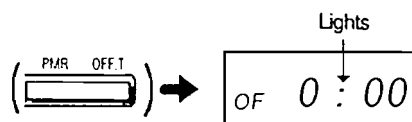
[2] On the radio unit, handle the rotary channel selector knob for minute setting at "30".
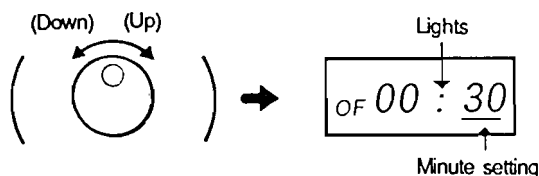
(Down) (Up)

Lights

OF 00 : 30

Minute setting

[3] On the radio unit, after pressing the FUNC button, handle the rotary channel selector dial for hour setting at "22".

(Down) (Up)

Lights

OF 22 : 30

Hour setting
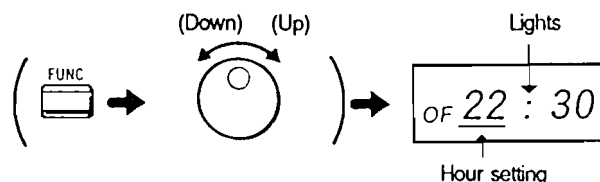
[4] When the MAIN SET button on the radio unit is pressed, the OFF time operation is validated, and a dot mark lights at the right lower edge of the hour's figure on the display, indicating that the OFF timer operation is valid.

OFF timer operation valid

MAIN SET

OF 22. : 30

Lights
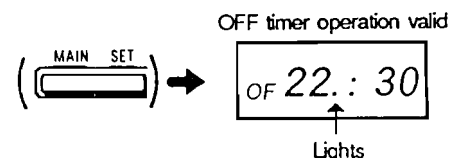
When the same MAIN SET button is pressed again, the OFF timer operation is canceled.

[5] When the PMR OFF.T button is pressed, the OFF timer time is set. The display returns to the normal time display.

[6] When 10:30 pm is reached, the radio unit automatically turns OFF the power.

[Setting method with band unit connected]

[Procedure]
[1] Set the 28 MHz or 1,200 MHz band as the main band.

[2] On the radio unit, after pressing the FUNC button, press the RF PMR OFF.T button.
Thus, "OF 0:00" (initial value) will be displayed.
The following operation is the same as for standard equipment. However, with a band unit connected, you can perform the minute and hour settings by the remote control.
When a CH MHz button on the remote control is pressed, the minute value varies. While pressing the FUNC button, when a CH MHz button is pressed, the hour value varies.

22. Other functions

(1) Method of transmission inhibition by remote control

Transmission can be inhibited by the PTT button on the remote control, by which button the radio unit itself otherwise enters the transmission mode.

[Procedure]
[1] On the radio unit, while pressing the FUNC button, press the VFO/STEP button.

[2] Release the same FUNC button from hand pressure, then wait until "F" disappears on the display section.

[3] A triple soft high-pitched beep sound is heard, indicating that the PTT button on the remote control is inhibited from operation. When the same operation is performed once again, a triple short high-pitches beep sound is heard, indicating that the PTT button on the remote control is validated.

(2) Method of reception monitor inhibition by remote control

From the radio unit itself to the remote control, reception sound is sent. This sending can also be inhibited.

[Procedure]
[1] On the radio unit, while pressing the FUNC button, press the MHz/100K button.

[2] Release the same FUNC button only from hand pressure, then wait until "F" disappears on the display section.

[3] A double soft high-pitched beep sound is heard, indicating that the remote control reception monitor is inhibited.
When the same operation is performed once again, a double short high-pitched beep sound is heard, indicating that the reception monitor is enabled.

(3) Beep sound OFF function

The beep sound emitted from the radio unit itself can be eliminated.

[Procedure]
[1] On the remote control, while pressing the FUNC button, press the SQL OFF button.
To restore, perform the same operation.
When the beep sound OFF setting is made, no beep sound is emitted. However, when restoring, a short high-pitched beep sound will be heard.

(4) Function to let the frequency display disappear

Of that band, the unnecessary display can be cleared off. However, in this case, the right side of the display section has the clock display.

[Procedure]
[1] Set as the main band (or sub band) the band of which the display is to be cleared off.

[2] On the radio unit, while pressing the FUNC button, press the MAIN button for that band.
When the display disappears, another band is automatically set as the main band instead.
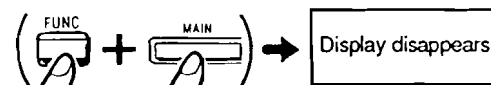
[3] To restore, press the MAIN button for the band of which the frequency display is off, and the frequency display appears with a double short high-pitched sound.

Band of which display is off.
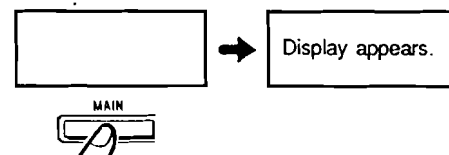
[Advices]
[] With a band unit connected (triple band mode), display can be cleared off for up to 2 bands.

[] When the same procedure is operated to the band unit connected, the clock display appears for that band.

(5) Usage of REC terminal

The reception sound is output to the REC terminal. For the standard modulation, it is about 450 mV (load impedance 100 kohms so that this terminal can be connected with the line input of the cassette deck, etc. for recording.
In this connection, note that such a device with a low input impedance such as a cassette deck, etc. has the recording level lowered.

23. ATV operation method

The C50/C50D is provided with the IF output terminal, the video input terminal and the external device interface terminal ACC2 so that the ATV (amateur TV) operation can be made on the 1,200 MHz band.
The following shows the ratings of the respective terminals.
IF signal output impedance: 50 ohms
Reception signal strength, at 60 dBu: About -40 dBm
Video input signal level: 1 Vp-p

On ACC2 terminal

Pin No.	Pin name
1	13.8 V
2	ATV. AF
3	ATV MIC.
4	1200MHz TX8V
5	GND
6	8 V at power ON (in response to POWER switch)
7	ATV microprocessor controlled (8 V to 13.8 V)
8	NC
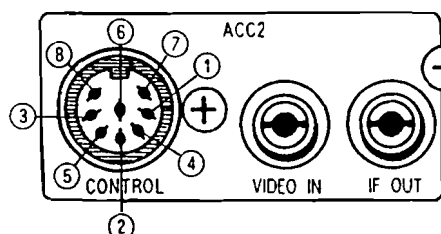
[Note]
For ATV related equipment, refer to its relative documents.
For ATV operation, its exclusive interface is necessary.
Of the C50/C50D, the ATV operation is in the FM mode.

24. Paging function

Paging function and code squelch function

This function is very convenient in calling a specific individual station (which is named an individual call) or calling all members of a specific group simultaneously (which is named a group call).

[Note]
For operation using the paging function and the code squelch function, an optional CTD50 needs to be installed.
The operation should be performed in the state that squelch adjustment has been made (in which state the noise is not heard from the speaker.)

(1) Code setting

For operation using the paging function and the code squelch function, preset individual codes (3-digit) and their group code (3-digit) in memory.

Unless the individual codes and the group code are set, it is not feasible to correctly perform the paging or code squelch operation.

Code setting example:

	Individual codes	Group code
Station A	111	
Station B	222	050
Station C	333	
Station d	444	

[Advice]
[] The individual and group codes each consist of 3 digits,   which are three DTMF signals representing 0 to 9.
Thus, a code is a triple DTMF signal.

[Note]
The paging operation requires an agreement in any of individual and group codes for communications.

[Own-station individual code setting method]

Set your own station individual code at M0.

[Procedure]
[1] On the remote control, while pressing the FUNC button, press the 2 CODE button.
Otherwise, on the radio unit, after pressing the FUNC button, press the PAG/CODE button.
Thus, on the display section, the frequency display will disappear and instead "M0 C000" (initial value) be displayed, which is referred to as the code display status.

[2] In this status, when a CH MHz button on the remote   control is pressed, a display of M0, 1, 2, 3, 4, 5 and P   is sequentially made on the display section, which are referred to as code address numbers (a code address number can also be altered by the rotary channel selector dial).
Any code is factory set at "000".
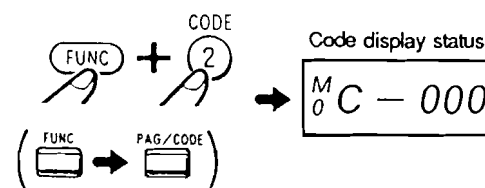
[3] On the remote control, press a CH MHz button to display "M0". Thereupon, press a numeral key "1" three times on the remote control. After pressing it three times, a single long high-pitched sound (C) is heard, informing the completion of setting an individual code.
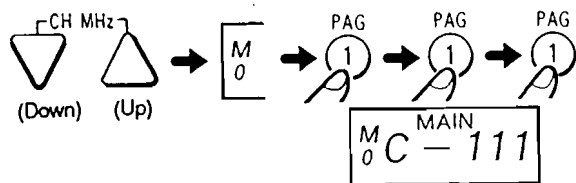
[4] To cancel the code setting mode or return to the frequency display, on the remote control, once again, while pressing the FUNC button, press the 2 CODE button. Or, press the A CLR PWR button on the remote control.

[Group code setting method]

Set a group code at code address number 1 to 5.

[Procedure]
[1] On the remote control while pressing the FUNC button, press the 2 CODE button.
Otherwise, on the radio unit, after pressing the FUNC button, press the PAG/CODE button.
Thus, on the display section, the frequency display will disappear, and instead the code display appear.

Code display status
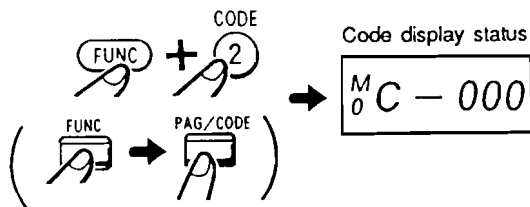
[2] On the remote control, press a CH MHz button to display code address number 1 (also by the rotary channel selector dial). Then, press numeral keys "0", "5", again "0" in this order on the remote control. After the termination of pressing, a single long high-pitched sound (C) is heard, informing the completion of setting a group code.
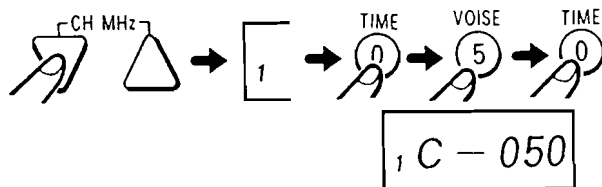
[Method of adding monitor function to group code]

With the monitor function added to the group code, when a PAG signal having an agreement in the group code to which the monitor function is added is received, the paging operation is performed irrespective of the code address location.

[Procedure]
[1] On the remote control, while pressing the FUNC button, press the 2 CODE button.
Otherwise, on the radio unit, after pressing the FUNC button, press the PAG/CODE button.

[2] On the remote control, press a CH MHz button to display the code address number of the group code to which the monitor function is added.

Code address call
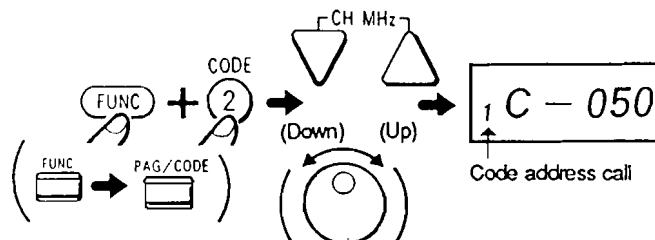
[3] On the remote control, while pressing the FUNC button, when the 3 T.SQL button is pressed, "M" lights on the display section, indicating that the monitor function is set.

[4] To cancel the monitor function, on the remote control, once again, while pressing the FUNC button, press the 3 T.SQL button. Otherwise, on the radio unit, for this end, press the T.SQL/T.F button.

Monitor function setting

When pressed once again ➡ Cancel
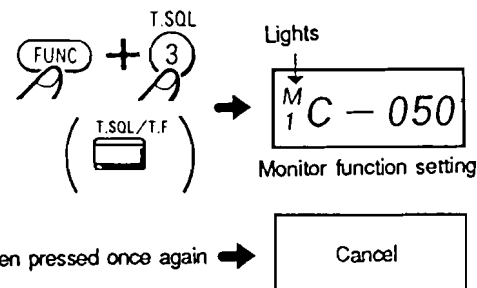
Code address number	Application	Monitor function	Rewriting
M 0	Own-station code (automatically transmitted in PAG operation)	All-time monitor	
1			
2		Setting or canceling the monitor function is feasible.	Feasible
3	Group code		
4			
4			
5			
P	Individual code for opposite station	Unusable	Unfeasible

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(2) Paging operation method

[When calling a specific station]

1. Transmission side
Determine the operating frequencies with the opposite station beforehand.

[Procedure]
[1] Set your own-station individual code at M0. (E.g. 111)

[2] On the remote control, while pressing the FUNC button, press the 2 CODE button to call a code address. Otherwise, on the radio unit, after pressing the FUNC button, press the PAG/CODE button. Thereupon, either way, set the opposite station individual code (e.g. 222) by numeral keys on the remote control.

CODE
(FUNC) + (2) → C - 000
(FUNC → PAG/CODE)
Code address call

CODE CODE CODE
(2) → (2) → (2) → C - 222
:Opposite station individual address setting
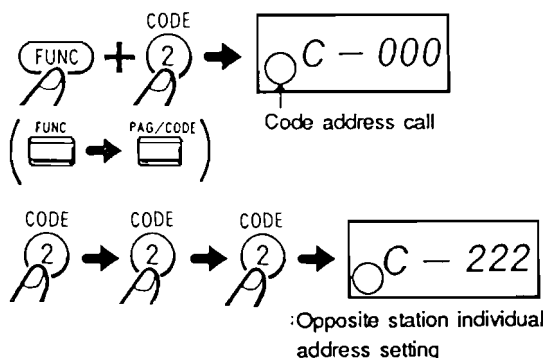
[3] On the remote control, while pressing the FUNC button, press the 2 CODE button to provide the frequency display.
Otherwise, on the radio unit, after pressing the FUNC button, press the PAG/CODE button.
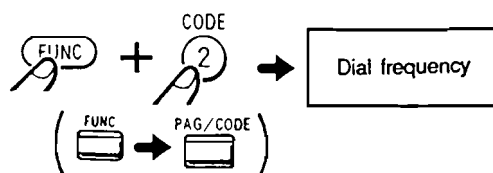
CODE
(FUNC) + (2) → Dial frequency
(FUNC → PAG/CODE)

[4] On the remote control, while pressing the FUNC button, press the 1 PAG button to engage the paging mode.
Otherwise, on the radio unit, press the PAG/CODE button.

Lights
PAG
(FUNC) + (1) → Dial frequency P
Paging mode
(PAG/CODE)
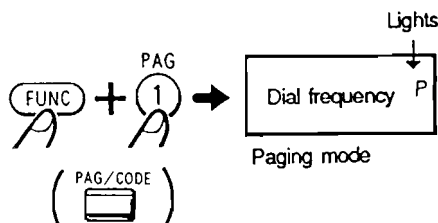
[5] Press the PTT button on the remote control. Thus, a paging signal will be sent out. After the termination of this sending out, make communications.

Paging signal
PTT ON

[Advices]
[] After contacting with the opposite station, cancel the paging mode for communications.
If the paging mode is held, each time the PTT button is pressed, a paging signal is sent out.

[] The paging signal sent out has the opposite station set code and your own station code transmitted in succession.

[] While the paging signal is sent out, the voice from the microphone is not subject to modulation.

[] As to the timing to send out, in the simplex mode, the paging signal is sent out about 300 msec after pressing the PTT button, while in the repeater mode, it is about 600 msec after that.

Opposite station individual code or group code — About 600 msec (for paging mode)
[ ] [ ] [ ] * [ ] [ ] [ ] ← Own-station individual code
About 300 msec (for code squelch mode)
Automatically sent out with paging signal
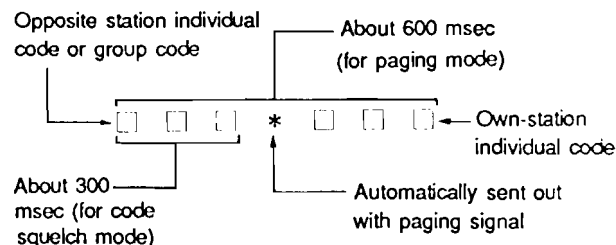
2. Reception side

Determine the operating frequencies with the opposite station beforehand. Complete the squelch adjustment correctly (by which the noise is not heard from the speaker).

[Procedure]
[1] On the remote control, while pressing the FUNC button, press the 1 PAG button to engage the paging mode. Thereupon, enter the standby mode. Thus, "P" will appear on the display section.
Otherwise, on the radio unit, press the PAG/CODE button.

PAG   Paging mode
(FUNC) + (1) → Dial frequency P
(PAG/CODE)
Lights
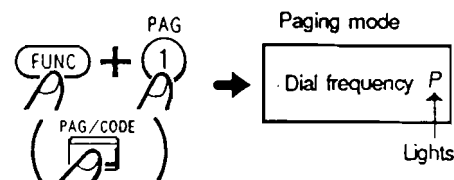
[2] When your own-station individual code is received, a single high-pitched and double low-pitched sound is emitted 7 times, and "P" starts flickering at the right of the display.
Further, the frequency display disappears and instead the opposite station individual code is displayed.
When the opposite station whose individual code is 111 is called, "PC-111" is displayed.

Flickers
For agreement between received code and memory code for own station → PC - 111P
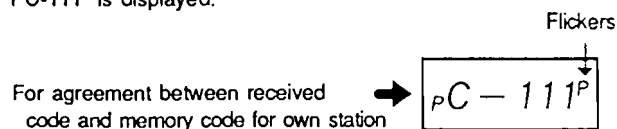
[3] For communications, on the remote control, while pressing the FUNC button, press the 1 PAG button twice to cancel the paging mode, thereafter perform communications.
Otherwise, on the radio unit, press the PAG/CODE button twice

Disappear
For communications   PAG
→ (FUNC) + (1) → Paging mode cancel
Press twice (コード表示の時)
(PAG/CODE)
Press twice
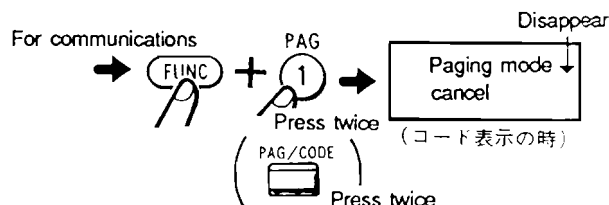
[Operation example]

Set codes at code addresses.

[Station A] Example of code address contents
MO: 111... own-station individual code
1: 222... station B individual code
2: 333... station C individual code

5: 050... group code (Add the monitor function.)

[Station B] Example of code address contents
MO: 222... own-station individual code
1: 111... station A individual code
2: 333... station C individual code

4: 050... group code (Add the monitor function.)

Communication example 1 (Group call)

Station A

$^{M}_{5}C-050^{P}$ —Lights.➡ (PTT ON)

(Frequency display appears.)

Station B individual code is displayed after code address number ‡ ʒ

$^{M}_{5}C-050^{P}$ — Lights after flickering.

$_{P}C-222$

Station B

$_{4}32.000^{P}$ ➡ $^{M}_{4}C-050^{P}$ — Lights after flickering.

(PTT ON)

Station A individual code is displayed after code address number P.

(Frequency display appears.)

$_{P}C-111$

After canceling the paging mode, perform communications.

Communication example 2 (Individual call)

Station A

$_{1}C-222^{P}$ —Lights. (PTT ON)

(Frequency display appears.)

$_{P}C-222^{P}$ —Lights after flickering.

Station B

$_{4}32.000^{P}$ ➡ $_{P}C-111^{P}$ —Lights after flickering.

(PTT ON)

After canceling the paging mode, perform communications.　　(Frequency display appears.)
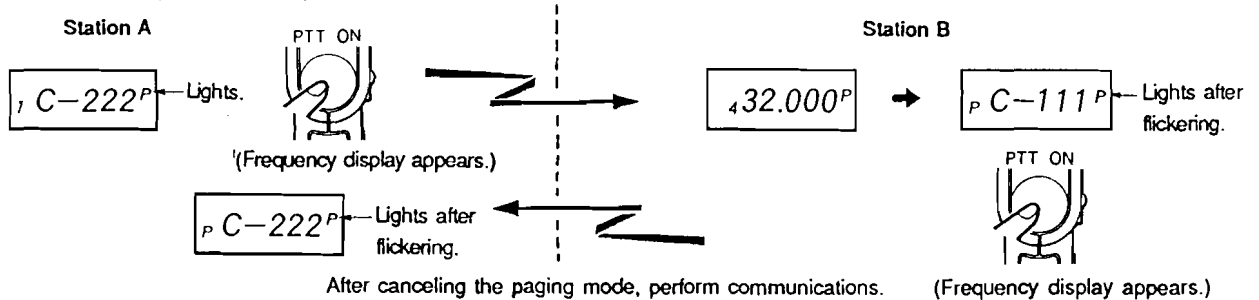
[Notes]

1. With your own-station Individual code set at code address number 1 to 5, when the transmission mode is engaged, the group code is sent out. (This operation is not proper.)
2. Due to Interference, etc., when the opposite station Individual code is not completely received, "E" appears on the display section, Indicating that the opposite station individual code is not confirmed.

$_{P}E-XXX$ The lastly received code is displayed.
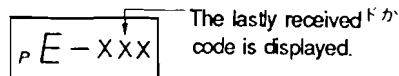
[Advices]

[] For operation on a group code, add the monitor function to the code set at code address number 1 to 5. With the monitor function added, "M" lights above the code address number display, indicating that the monitor function is added.

[] The beep sound emitted with an agreement in individual code or group code can be eliminated.
For this elimination, on the remote control, while pressing the FUNC button, press the 1 PAG button or the A CLR PWR button. Otherwise, on the radio unit, press the VFO/STEP button or the PAG/CODE button.

[] In paging operation, the code displayed is sent out.

[] With an optional DTMF unit connected to our radio unit not provided with the paging function, it is possible to gain access to the C50/C50D. For this, perform the following procedure:

Example where access is gained to C50 from C5200:
(Use an optional microphone CMP830D.)

[1] Set the C50/C50D to the paging mode.

[2] Designate the opposite station individual code and your own-station individual code by numeral keys on an optional microphone CMP830D for C5200.
(Press them while pressing the PTT button.)

o. Opposite station individual code
p. Own-station individual code
g. Be sure that this mark is sent out.

[Note] Each Interval in pressure between numeral keys should be within 1.5 sec.

[3] In the C50/C50D side, when the paging code is received, "P" starts flickering. Accordingly, cancel the paging mode to perform communications.

3. Selection of beep sound for signal incoming in paging mode

Normally, at the time of signal incoming in paging mode, a single high-pitched and double low-pitched sound (G) is emitted 7 times. This number of emissions can be made one.

[Procedure]
[1] Set the frequency display. ("P" for the paging mode appears.)

[2] On the radio unit, while pressing the FUNC button, press the PAG/CODE button.
Thus, a single soft high-pitched sound is heard to indicate the setting completion. When the same operation is performed again, a tripe soft high-pitched sound is heard and then the prior status is restored.

$$\left(\boxed{\text{FUNC}} + \boxed{\text{PAG/CODE}} \right)$$
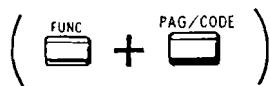
[Notes]
1. Upon signal incoming in the paging mode, even when the PTT button is pressed while the said beep sound (G) is emitted, this sound does not disappear.

2. When paging signals are received over two waves or more at the same time, an error may occur or no further signal may arrive. This does not means any failure.

4. On DTMF signal control terminal

A port of an accessory terminal is Hi/Lo controlled by an optional DTMF unit. More, the interface for external equipment can also be driven thereby.
This control terminal is of an open collector type.
A port of an accessory terminal is rated at as follows:
Maximum voltage 16 V and current 10 mA

[Note]
Never try to control AC 100 V directly, as this is very dangerous.

5. Code squelch operation method
The code squelch operation is feasible with a code set at code address numbers 1 to 5 and M0.

[Procedure]
[1] Set as the main band the band of which the code squelch operation is performed.

[2] Display the code to which the code squelch operation is applied.
At this time, add the monitor function.

[3] On the remote control, while pressing the FUNC button, press the 1 PAG button twice to engage the code squelch mode.
Otherwise, on the radio unit, press the PAG/CODE button twice.

$$\boxed{\text{FUNC}} + \boxed{\text{PAG } 1} \rightarrow \boxed{^M_1 C-333^C}$$

Code squelch mode sign
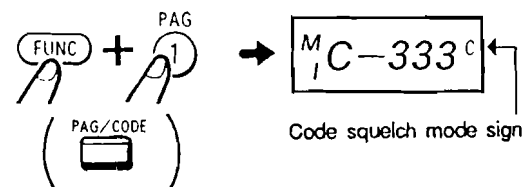
[4] Restore the frequency display, then press the PTT button on the remote control to perform communications.
Each time the PTT button is pressed, a DTMF signal is sent out.

$$\rightarrow \boxed{_4 30.00^C}$$

Lights
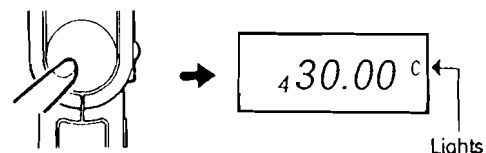
[Advice]
[] Predetermine the code. Communications are unfeasible without an agreement in code.

25. Usage of DTMF

For use of DTMF, connect an optional DTMF unit CTD50.

[Procedure]

DTMF signal sending

[1] On the remote control, while pressing the PTT button, when a numeral key, an alphabetical key A to D or an sign key # or * is pressed, a DTMF signal is sent out.

[Advice]
Direct to the radio unit itself the remote control operating on infrared light. A DTMF signal is sent out only while pressing a key.

PAG	CODE	T.SQL	CLR PWR
①	②	③	Ⓐ
PACKET	VOISE	VU	MR ATT
④	⑤	⑥	Ⓑ
RPT	REV	+	MS PS
⑦	⑧	⑨	Ⓒ
PMR MUTE	TIME	CALL DIMM	MW K L
⊛	⓪	�#	Ⓓ

PTT ON
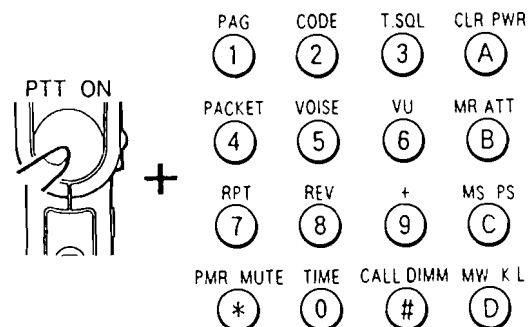
[Note]
During the sending out of DTMF signal, the voice from the microphone is not subject to modulation.

26. Usage of voice memory

For a voice memory, install an optional voice memory unit CVM50.

[Advices]
[] After installing the CVM50, be sure to perform all phrase   erasure (see page 63.)

[] Before recording, set the bit rate.

[] The voice memory is common to the respective bands.

[] On phrase
   A unit recordable area is called a phrase.

[] On bit rate
   This determines the recordable time of one phrase.

Bit rate	Sound quality	録音時間
3	High	Short (8 sec)
2	↓	↓
1		
0	Poor	Long (32 sec)

With the backup switch of the CVM50 set to OFF, when the MAIN SW of the C50 is set to OFF, the memory contents are erased. In this case, perform all phrase erasure again for use.

(1) Method of recording voice from microphone

[Procedure]
[1] Set as the main band the band of which the voice mode is   to be set.

[2] On the remote control, while pressing the FUNC button,   press the 5 VOICE button, and the frequency display will   disappear and then the voice mode be engaged.

Frequency display disappears.

VOISE
(FUNC) + (5) →
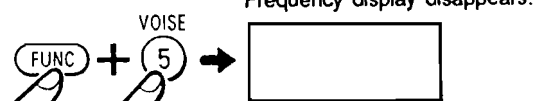
[3] On the remote control, set your desired phrase number (1   to 4) by a numeral key, and that phrase number display   will light.
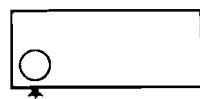
Phrase number (1 to 4) lights.

[4] On the remote control, while pressing the FUNC button,   press the A CLR PWR button, and "M" flickers, indicating   that the recording mode is engaged.

Flickers
M
Phrase number (1 to 4) lights.

[5] Press the PTT button on the remote control, and   recording will start with a beep sound (A). In this way, the recording mode is held while pressing the PTT button.

[
6] Release the PTT button from the hand pressure, and recording will end with a beep sound (H).
However, before releasing the PTT button, when a certain time goes by, recording stops with a soft high-pitched   beep sound (H). **Upon releasing the PTT button, the recording mode is canceled and the frequency display is restored.**

[Note]
For using an optional microphone CMP838G, adjust the microphone selector to the voice mode set band.

(2) Method of recording reception signal
[Procedure]

[1] Set as the main band the band of which recording is to   be made.

[2] After setting the voice mode, set your desired phrase number by a numeral key on the remote control. On the radio unit, while pressing the FUNC button, press the REV/+ button, and reception signal starts to be recorded   with a short high-pitched beep sound (A).
When a certain time goes by, recording automatically ends with a soft high-pitched beep sound (H).

[Advice]
To stop recording, press an FUNC button.

Notes]
1. Unless a phrase number is set, recording is made at the previously set phrase number.

2. Reception signal is to be recorded at phrase number 2 to   4. Therefore, even when phrase number 1 is set, recording   is automatically made at phrase number 2.

(3) Playback

[Method of checking recording contents]

[Procedure]

[1] Set as the main band the band of which the voice mode is to be set.

[2] On the remote control, while pressing the FUNC button, press the 5 VOICE button, and the frequency display will disappear.

[3] On the remote control, set your desired phrase number by a numeral key.

```
┌─────────────────┐
│     MAIN        │
│  1              │
└─────────────────┘
```

[4] Press the PTT button on the remote control, and playback will start with a beep sound (A). While the PTT button is pressed, playback continues.

[5] Release the same PTT button from hand pressure, and playback will end with a beep sound (H). However, when the recording contents terminate before releasing the PTT button, playback also ends with a beep sound (H).
In addition, when the PTT button is released, the frequency display is restored.

[Method of transmitting recording contents]

[Procedure]

[1] Set as the main band the band of which the voice mode is to be set.

[2] On the remote control, while pressing the FUNC button, press the 5 VOICE button, and the frequency display will disappear.
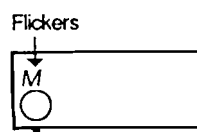
[3] Press the PTT button on the remote control. Then, holding the transmission mode, set your desired phrase number by a numeral key on the remote control.
At the same time that a numeral key (phrase number 1 to 4) is pressed, the recording contents are transmitted.

[Advice]
On the way of transmitting the recording contents, when a numeral key on the remote control is newly pressed to set a phrase number, this transmission of the recording contents of the previously selected phrase is stopped. In this way, when the same numeral key is repressed, the recording contents of that phrase number start to be transmitted.

(4) Erasure of recording in voice memory

[1-phrase erasure method]

[Procedure]

[1] Set as the main band the band of which the voice mode is to be set.

[2] On the remote control, while pressing the FUNC button, press the 5 VOICE button, and the frequency display will disappear.

[3] By a numeral key on the remote control, set your desired phrase number of which the recording contents are to be erased.

[4] On the remote control, press the PTT button to enter the playback mode. Then, on the radio unit, press the VFO/STEP button. Thus, a beep sound (C) will be heard to inform that that recording of voice memory is erased.

[5] Release the PTT button, and the voice mode will be canceled and the frequency display be restored.

[All phrase erasure method]

[Procedure]

[1] Set the POWER switch to OFF once.

[2] On the radio unit, while pressing the FUNC button, set the POWER switch to ON. Thereby, the voice memory will be erased in every phrase.

[Note]
Even after pressing the POWER switch, keep pressing the FUNC button for about 2 seconds.

(5) Bit rate selection method

Recording time becomes shorter in the order of bit rates 0, 1, 2, and 3, in which order sound quality is also enhanced.
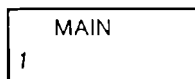Initially, bit rate 3 is set, which has 8 seconds of recording.
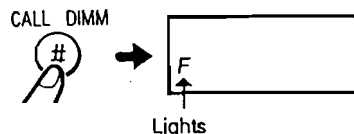
[Procedure]

[1] Set as the main band the band of which the voice mode is to be set.

[2] On the remote control, while pressing the FUNC button, press the 5 VOICE button, and the frequency display will disappear.

[3] On the remote control, press the # CALL DIMM button, and "F" will light at the phrase number display location.

CALL DIMM

Lights

[4] Set your desired bit rate (0 to 3) by a numeral key on the remote control. Simultaneously with key pressure, the voice mode will be canceled and the frequency display be restored.

(6) Auto voice playback

When the power is turned ON by virtue of the ON timer, voice playback can be made automatically.

[Procedure]

[1] Set the ON timer.

[2] Set as the main band the band of which the voice mode is to be set.

[3] On the remote control, while pressing the FUNC button, press the 5 VOICE button, and the frequency display will disappear.

[4] Set your desired phrase number by a numeral key on the remote control, and the phrase number display will light.

[5] In this situation, set the POWER switch to OFF (on the remote control or on the radio unit).

[6] When the ON timer set time is reached, the radio unit is powered ON so that voice playback is automatically made from the set phrase number.

[7] Upon termination of playback, normal operation is restored.

[Advice]
When stopping playback on the way, press the POWER switch to OFF. When the POWER switch is repressed, normal operation is restored.

[Note]
During voice playback, no reception sound is heard even in the reception mode.
Any other buttons than the POWER switch are disabled.

27. Usage of AFC/RIT (only for 1,200 MHz band)

This feature serves to correct the frequency deviation of the opposite station for easier listening.

1. AFC
AFC works to correct the frequency deviation of the opposite station at a range of +/-7 kHz automatically.

[Procedure]
[1] Set the main band.

[2] On the radio unit, press the AFC/RIT button, and its associated green LED will light to indicate that AFC is feasible.
Press this button again to restore the prior status.

2. RIT
RIT works to correct the frequency deviation of the opposite station manually.

2-1 Reception mode
[Procedure]
[1] Set the main band.

[2] On the radio unit, after pressing the FUNC button, press the AFC/RIT button, and its associated red LED will light, in which status the frequency value is displayed down to the order of hundreds of Hz.

[3] Handle CH MHz buttons on the remote control or the rotary channel selector dial to obtain an easy-to-hear frequency.
The frequency can be varied within a range of +/-9.8 kHz. However, transmission is made on the original frequency.
Even with a change in displayed frequency by RIT, the transmission frequency does not vary.

(Down)   (Up)

Changes
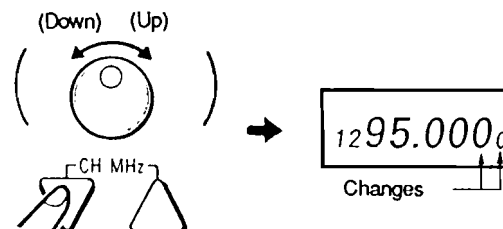
2-2 Transmission/reception mode
Transmission is feasible on a frequency finely adjusted during reception.

[Procedure]
[1] Set the main band.

[2] Set RIT (reception mode).

[3] On the radio unit, while pressing the FUNC button, press the AFC/RIT button.
When the same operation is performed again, RIT (reception mode) is restored.

28. On C50D cooling fan

When the POWER switch is set to ON, the cooling fan starts rotating. More, with transmission, it rotates at higher speed.
The C50D employs a compulsory air-cooling system in which a cooling fan is used for a more radiation of the heat sink.
The cooling fan section consists of the cooling fan itself and an anti-dust filter.

Upon a long-time use of the cooling fan, the anti-dust filter is stopped, thus resulting in reduced radiation.
To avoid this, always keep the anti-dust filter clean.

[Note]
For proper operation, select an installation location not preventing the radiation of the heat sink. Separate the heat sink section a few centimeters away from the wall.

[Removing the anti-dust filter]

[Procedure]
[1] Draw out the fan cover, and take out the anti-dust filter. (Unlock by a straight-edge screwdriver.)

Screwdriver
Anti-dust filter
Fan cover
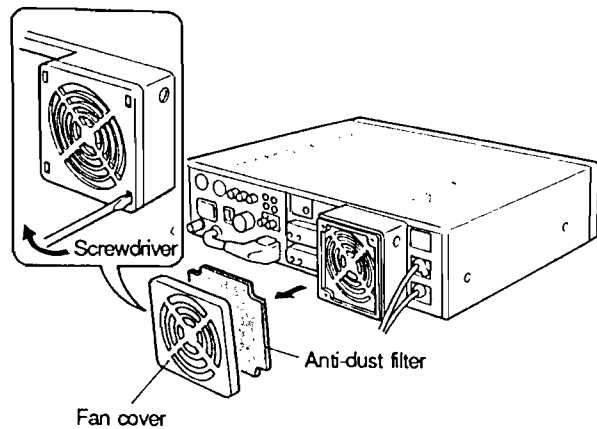
[2] Wash the anti-dust filter with water.
If it is seriously soiled, clean it with neutral detergent, then wash with water well.

[3] After washing with water, remove water from it and dry it well.

[4] Reinstall the anti-dust filter and reinsert the fan cover as before.

29. Installation of options

1. Installing a band unit

[Procedure]

Installing a band addition kit:

[1] Set the MAIN SW on the rear to OFF.

[2] Draw off the panel at the right side of the front.
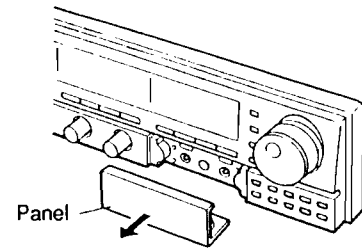
Panel

[3] Insert an accessory panel.
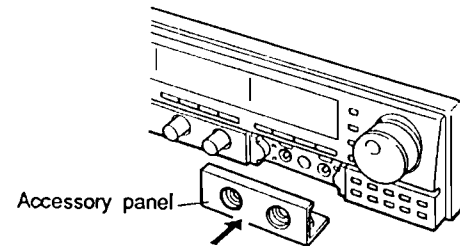
Accessory panel

[4] Insert two accessory knobs.

Accessory knobs
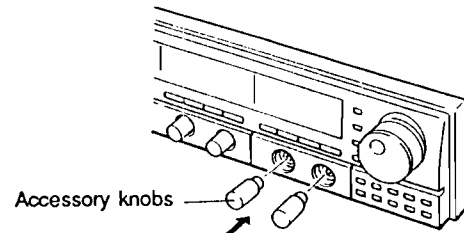
Installing a band unit:

[5] Remove the four screws at the rear, and remove the   panel, then detach the sheets from the rear panel.

Sheet
Rear panel
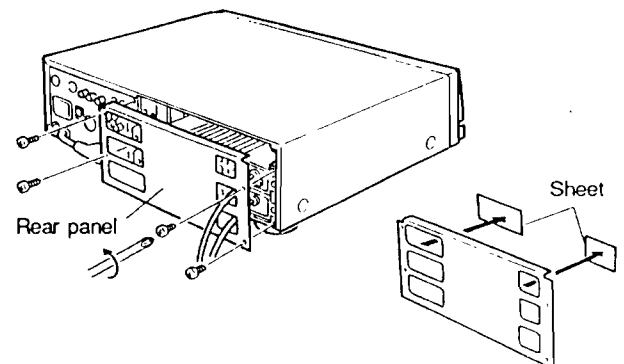
[6] Fix an accessory power supply terminal to the band unit   by screws.

Power supply terminal
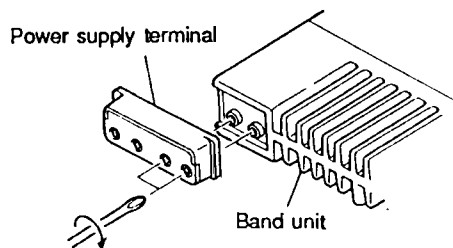
Band unit

[7] Slide in the band unit to the top station and fix it by   three screws.

[Note] Be careful in installation, holding the   directionality properly.

Band unit
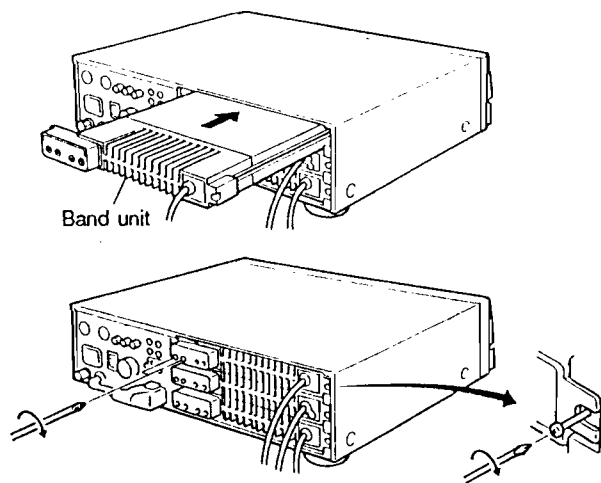
[8] Put the coaxial cable through the hole on the said rear   panel, and fix it by four screws as before.

後面パネル
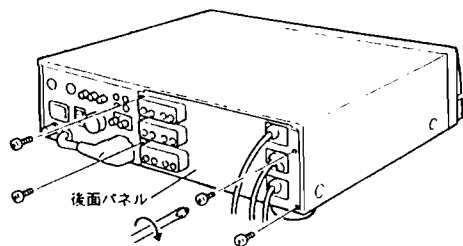
[9] Set the MAIN SW on the rear to ON. (Clock display)

[10] Push the reset switch pin at the bottom by a pointed   nonmetallic piece.

Bottom of radio unit
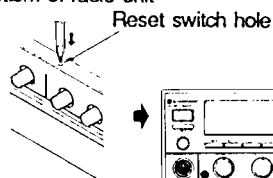
Reset switch hole   Note: When the reset switch is pressed, every display on the display section disappears except the clock display.
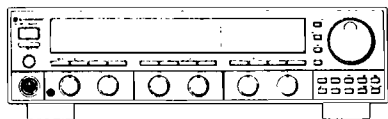
[11] Every display disappears and the clock is reset to   0:00. Installation is completed herewith.

[12] Finally, set the POWER switch to ON.

[Notes]
1. With the C50D, pay attention to the lead wires of the   cooling fan in installation work.
2. Insert a band unit in to the specified station.
3. After installing the band unit, be sure to reset.
4. Even with a 28 MHz band unit CRF081D (50 watts)   installed, the C50 does not operate on Hi power.

2. Installing CTN50, CTD50 and CVM50

[Procedure]
[1] Remove the top cover.

[2] Install these units in their respective locations.

CTN50   CTD50   CVM50

CVM50

CTN50

CTD50
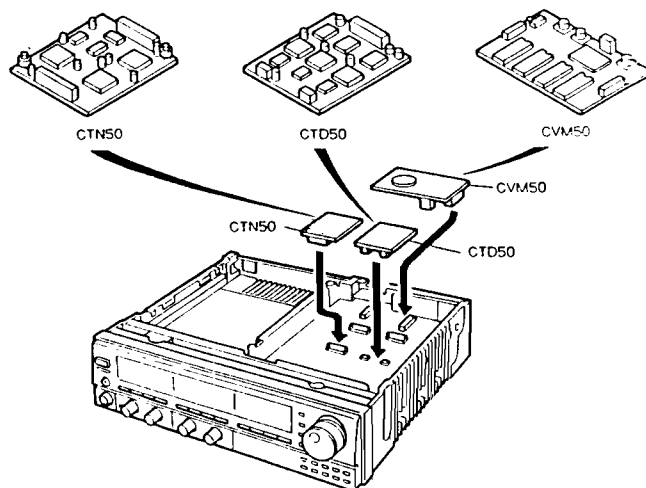
[Troubleshooting]

Before asking for service, please check the relative one(s) of the following items. Unless restoration is obtained, contact with the dealer from which you have purchased, or our authorized representative nearest you or our service station.

	Symptom	Main possible cause and action
Power relatives	Power does not turn ON.	*Check the fuse. *Due to DC cable disconnected *Due to MAIN SW OFF *Due to AC cord disconnected
	Power turns OFF automatically.	*Due to OFF timer operating
Display relatives	Frequency display of one band remains off.	*Due to function letting the display section off
	Display section is dark.	*Due to DIMM function
	Display flickers.	*When DC 20 V is applied to DC IN 13.8V terminal, display flickers. Turn the external DC power supply OFF, and unplug the DC IN 13.8 V terminal, thereupon check the voltage of external DC power supply.
Reception relatives	Only strong signals are received.	*Due to attenuated reception sensitivity in ATT operation *Due to SQL knob rotated fully clockwise *Due to antenna abnormality *Due to coaxial cable abnormality
	No signals are received.	*Due to antenna disconnected *Due to coaxial cable disconnected **PAC* appears on display section.
	Reception sound is not heard.	*Due to disagreement in tone frequency during T.SQL operation *Check external speaker for connection. *Check volume control for position. *Due to paging mode or code squelch mode engaged
	Reception sound is not sufficiently high.	*Due to mute operation
	Monitor sound of remote control is not heard.	*Connect earphone correctly. *Due to remote control monitor inhibit operation *Check remote control antenna for connection. *Check monitor sound volume control. *Due to low battery of remote control. *Due to mute operation in radio unit itself
Transmission relatives	Transmission output is not sufficiently high.	*Due to poor matching with antenna *Due to Lo power mode engaged *Due to antenna disconnected *Due to antenna not connected
	Transmission is unfeasible from remote control side.	*Due to remote control antenna not connected in radio unit *Due to remote control PTT button not pressed *Due to remote control transmission inhibit operation *Due to packet mode engaged *Excessively remote from radio unit itself
	Transmission is unfeasible from external microphone. (With CMP838G)	*Due to MIC SELECTOR knob set at OFF *Due to wrong MIC SELECTOR knob position *Due to packet mode engaged

	Symptom	Main possible cause and action
Repeater relatives	RPT display appears automatically. Access is not gained to repeater station.	•Due to JARL settled RPT frequency engaged •Due to different tone frequency •Due to excessive remoteness from repeater station •Due to different shift frequency •Due to shift frequency set to "+"
	"OFF" appears on display section.	•Due to shifted frequency going off the band
Scan relatives	Scan is not made.	•Due to SQL knob rotated fully counterclockwiseAdjust the SQL knob.
	Memory scan is not made.	•Due to memory frequency not memorized
	Program scan is not made	•Due to start and end frequencies not memorized
Memory relatives	Memory rewriting is unfeasible.	•Due to different procedure with new memory
	Memory erasure is unfeasible.	•Press the VFO/SHIFT button without releasing the MR button from hand pressure.
	Memory frequency is not erased even by pressing reset button.	•This product does not permit erasure of memory frequency even by pressing the reset button.
Paging relatives	Paging operation is not made.	•Due to CTD50 (option) not installed •Paging operation requires code memorizing. •Due to disagreement in code with opposite station •Due to opposite station or own station wave not arriving
	"E" appears on display section.	•Due to opposite station code read error
	Code setting is unfeasible.	•Due to CTD50 (option) not installed
Packet relatives	Packet communications are unfeasible.	•Due to disagreement in connection between ACC1 terminal and TNC •Due to packet mode not engaged •Due to inappropriate level of audio output to TNC •Due to inappropriate delay time in transmission to TNC •Due to inappropriate level of modulation from TNC
Time relatives	Clock display does not disappear.	•Set the MAIN SW on the rear of radio unit to OFF.
	Time does not vary.	•It does not vary while ":" lights on display section (during time setting mode).
	OFF or ON timer operation is not made.	•A dot mark does not light at the right edge of time display.
Others	Volume control is unsmooth in operation.	•Volume is controlled electrically. Therefore, this is not an abnormality.
	28/1.2G button is disabled.	•28/1.2G button is enabled only with optional band unit connected.
	Remote control operation is unfeasible.	•Due to low battery of remote control •Some functions cannot be operated from remote control. •Due to remote control (infrared light) not directed to light receiver of radio unit.
	Remote control monitor or transmission is unfeasible.	•Due to remote control antenna not installed •Due to low battery of remote control
	Remote control PTT operation is unfeasible.	•Due to excessive remoteness from radio unit itself Use at an appropriate remoteness enough that weak waves can arrive.
	Display is abnormal for power ON.	•Charge the rechargeable lithium battery. It takes about 20 hours for full charging. It is always charged during clock display or operation.
Voice memory	Hum is reproduced or playback is made on a plurality of phrases continuously.	•Perform all phrase erasure. After installing CVM50 or with CVM50 backup switch OFF, when the MAIN SW is set to OFF, the contents at SRAM of CVM50 are unfixed. To counter this, be sure to perform all phrase erasure before use.

[C50/C50D Ratings]

Specifications			Model	C50	C50D	Option unit
General specifications	Frequency range		144 MHz band	144 ~ 145.995MHz		——
			430 MHz band	430 - 439.995MHz		—
			1,200 MHz band	Option		1260 ~ 1299.990MHz
			28 MHz band	Option		28 ~ 29.695MHz
	Wave type			16F3(FM)		
	Antenna impedance			50Ω		
	Supply voltage	AC		100V ± 10%		
		DC		13.8V ± 15%		
	Grounding type			Negative GND		
	Current consumption (max.)	Reception (in standby)		1.3A		
		Transmission	144 MHz band	4.5A	12A	—
			430 MHz band	4.5A	12A	—
			1,200 MHz band	Option		6.5A
			28 MHz band	Option		10W : 4.5A/50W : 12A
	Operating temperature range			−10℃ ~ +50℃		
	Dimensions (width x height x depth) ( ): Protrusions included			360×90×300mm (362×109×330)	360×90×300mm (362×109×365)	Option unit dimensions 155×25×217mm
	Weight			11kg	11.5kg	Option unit weight 1.2 kg

Specifications		Model	C50	C50D	Option unit
Transmitter	Transmission output	144 MHz band	10W	50W	—
		430 MHz band	10W	40W	—
		1,200 MHz band	Option		10W
		28 MHz band	Option		10W/50W
	Modulation type		Reactance modulation		
	Spurious emission intensity	144 MHz band	Less than -68 dB		—
		430 MHz band			
		1,200 MHz band	Option		Less than -50 dB
		28 MHz band	Option		Less than -60 dB
	Max. frequency deviation		± 5kHz		
	Microphone impedance		600Ω		

Specifications		Model	C50	C50D	Option unit
Receiver	Reception type		Double conversion system		
	Intermediate frequency	144 MHz band	1st : 21.8MHz 2nd : 455kHz		— —
		430 MHz band	1st : 47.05MHz 2nd : 455kHz		——
		1,200 MHz band	Option		55.05MHz/455kHz
		28 MHz band	Option		10.7MHz/455kHz
	Reception sensitivity (12 dB SINAD)	144 MHZ band	$-16\text{dB}\mu(0.158\mu\text{V})$		——
		430 MHz band			
		1,200 MHz band	Option		$-16\text{dB}\mu(0.158\mu\text{V})$
		28 MHz band	Option		$-16\text{dB}\mu(0.158\mu\text{V})$
	Selectivity	144 MHz band	-6 dB: more than 12 kHz, -60 dB: less than 24 kHz		— —
		430 MHz band			
		1,200 MHz band	Option		-6 dB: more than 12 kHz, -60 dB: less than 24 kHz
		28 MHz band			
	Spurious interference ratio	144 MHz band	More than 65 dB		——
		430 MHz band	More than 60 dB		——
		1,200 MHz band	Option		More than 45 dB
		28 MHz band	Option		More than 65 dB
	Squelch open sensitivity	144 MHz band	$-20\text{dB}\mu(0.1\mu\text{V})$		——
		430 MHz band	$-20\text{dB}\mu(0.1\mu\text{V})$		——
		1,200 MHz band	Option		$-20\text{dB}\mu(0.1\mu\text{V})$
		28 MHz band	Option		$-20\text{dB}\mu(0.1\mu\text{V})$
	RIT 可変範囲	1,200 MHz band	Option		$\pm9.8\text{kHz}$
	S/N ration at 0.5 uV input		More than 30 dB		
	Low-frequency output		More than 1.5 watts (at 10 % distortion)		
	Low-frequency output impedance		8 Ω		

The above data is obtained through JAIA measurement method.

*Design and specifications subject to change without notice.

Accessories

Abundant accessories are available to ensure full enjoyment with
this product. Read the instruction manual for each accessory with
care for proper use.

CTN50: CTCSS 3-band unit
CTD50: DTMF 3-band unit
CVM50: Digital voice memory unit
CRF301: 1,200 MHz unit on 10 watts
CRF081: 28 MHz unit on 10 watts
CRF081D: 28 MHz unit on 50 watts
CAW05: DC power cable
CMP838G: Multi-function microphone